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ABSTRACT

Environmental factors are being increasingly recognized as playing a role in school effectiveness and educational outcomes. Volume 1 examines what is known concerning the diagnosis, design, and management of environmental quality in schools, and the perceived relationship between environmental quality and educational outcomes, as revealed in an investigation of five elementary schools in the Baltimore City Public School System. The following issues are addressed: (1) the perception of the nature of environmental quality within the context of schools; (2) the attributes of environmental quality perceived to have an impact on educational outcomes; (3) the impact of facility management, if any, on the perception of environmental quality in schools; (4) whether environmental quality can be assessed in local school contexts; (5) whether environmental-behavior research contributes to the improvement of environmental quality in schools; and (6) the effectiveness of action research in defining problems, providing solutions, and increasing knowledge and awareness of environmental quality in schools. Volume 2 provides a summary of the project objectives, problem and approach, and process and procedures of the Baltimore Environmental Quality Assessment Project. It provides the case reports of each school in the study, documenting specific aspects of environmental quality of concern. Each case study provides a brief analysis of the relationship between the attributes of environmental quality concerns and their potential educational impact. Areas addressed include the school's physical comfort and health; classroom adaptability; safety and security; building functionality; aesthetics and appearance; privacy; places for social interaction; and overcrowding. Appendices contain the process manual for school environmental quality diagnosis, prioritizing of the environmental concerns found for each school, and data collection sheets for both environmental quality attributes and student academic performance. (Contains 9 tables and 234 references.) (GR)

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A Multiple Case Study of the Diagnosis, Design and Management of Environmental Quality in Five Elementary Schools in the Baltimore City Public Schools from an Action Research Perspective

by

Jeffery A. Lackney

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A Dissertation Submitted in
Partial Fulfillment of the
Requirements for the Degree of

Doctor of Philosophy
in Architecture

at

The University of Wisconsin-Milwaukee

December 1996

Volume I

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Volume I

12·6·96

Major Professor (Signature) Date

George W. Keulks 12·17·96

Graduate School Approval Date

Quality In School Environments:

A Multiple Case Study of Environmental Quality Assessment in Five Elementary Schools in the Baltimore City Public Schools from an Action Research Perspective

by

Jeffery A. Lackney

The University of Wisconsin-Milwaukee, 1996

Under the Supervision of Gerald Weisman, Ph.D.

School officials across the U.S. increasingly recognize the impact of environmental quality of the school upon the educational process. What role these environmental factors are perceived to play in influencing effectiveness and outcomes, and how they interact in contributing to quality is less understood. The goal of this dissertation is to advance the state of knowledge concerning the diagnosis, design and management of environmental quality in schools, as well as the perceived relationship between environmental quality and educational outcomes, through a local context-based investigation of the school as a purposeful organizational system. An action research approach was adopted that confronts the problems of context based research. This dissertation involved the assessment of environmental quality in five selected elementary schools in the Baltimore City Public Schools. Each individual case study followed an action research process in which a selected number of teachers and administrators participated in clarifying the project scope, identifying environmental concerns, developing evaluative criteria, interpreting results, and formulating findings and conclusions. An aggregated cross-case data analysis was conducted for perceived differences in environmental quality, facility management processes and practices, and three educational outcome indicators: student academic performance, student social development, teacher instructional performance. The study concludes that the action research process is a useful tool in identifying the key high and low prioirity environmental qualities of concern that matter to students, parents, staff, teachers and administrators. Teachers perceive ten specific environmental quality attributes to have varying degrees of influence on educational outcomes. Teachers perceive facility management to have control and responsibility over physical comfort and health, safety and security, aesthetics and appearance and some control over personalization and ownership. The corollary to this conclusion, implied by the concept of "placemaking," is that educators feel they, their students, and the community, by implication, have some measure of responsibility, influence and control over the six remaining environmental qualities of classroom adaptability, building functionality, places for social interaction, privacy, sensory stimulation, and crowding/spaciousness.

12·6·96

Major Professor (Signature) Date

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Little did I know when I first visited Baltimore, as part of an undergraduate architectural tour in 1982, that I was actually conducting my first field visit for my dissertation which would be completed 14 years in the future. It is my pleasure to first thank the students, teachers, staff, parent volunteers, and school administrators who participated in this project, and I would especially like to thank Kate Finston for her extended insights into the world of local educational practice. In addition to the school participants, I would like to recognize facility managers Bob Parham and Cliff Overton, and Matthew Riley, the systems administrator who assisted my efforts within the Baltimore City schools, and Charles Brigden my research assistant. I would also like to particularly acknowledge the Johnson Controls Foundation for funding this research project.

From my first day at SARUP in August of 1986 until now, several people have made my residence in Milwaukee very enjoyable and challenging. Harvey Rabinowitz was the first to introduce me to the learning-by-doing method of post-occupancy evaluation in schools. In response to my occasional intellectual queries into participatory design, Harry Van Oudenallen's knowing and humorous smile has at times taught me more than words could have ever done. Gary Moore has offered his generous, yet critical insights on my work over the past four years. My collegues Herb Childress and Maggie Calkins have my special thanks for their highly-energetic intellectual and moral support. However, it is my Ph.D. Committee that I would like to especially thank: Jerry Weisman and Larry Witzling from SARUP, and Beverly Cross from the School of Education. Beverly was my forever cheerful educational reality check after the departure of James Cibulka, also from the School of Education, to whom I am also indebted. To Larry I give a very special thanks for offering me an intellectual environment for testing my academic theories in the crucible of architectural practice. Finally, I would like to extend a warm appreciation for my mentor, colleague and friend, Jerry Weisman, who has patiently followed my intellectual development for over ten years, and who still reminds me about the importance of '*The* Big Picture.'

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Finally, I would like to offer my deep gratitude and love to my wife Jill Dittrich, who has been both inspirator and critical editor in this exciting five-year process.

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PROJECT OVERVIEW

The goal of this dissertation is to advance the state of knowledge concerning the diagnosis, design and management of environmental quality in schools, as well as the relationship of environmental quality to educational outcomes, through a local context-based investigation of the school as a purposeful organizational system. Two interrelated research objectives comprise this goal with respect to the investigation of environmental quality in schools.

The first objective is to advance the state of knowledge concerning the role of the physical environment in supporting student academic performance, student social development, and teacher instructional performance. Findings from the literature on behavior research in architecture with respect to the impact of environmental quality on various outcomes of the educational process have been ambiguous at best. As a consequence of this inconclusive evidence, the role of environmental quality in the educational process has not received adequate attention from educational researchers.

The second objective is to advance the state of knowledge concerning the role of action research in affecting real, lasting improvements in the quality of the school environments in the United States. As a result of the arguably ineffective utilization of behavioral research, changes advocated in the literature on the design and management of the physical setting of the school have not been adequately recognized by educational practitioners.

As is often done in research, these two objectives are *not* viewed here in isolation from one another. This dissertation takes the epistemological position that these objectives must be seen as comprising two overlapping components of an integrated whole. We can not know the role of environmental quality in the educational process without first *acting on the school as a system and observing the results of that action in context.*

Rationale & Context

The deteriorating state of urban school facilities has been virtually ignored by the public and educational policy makers alike (GAO, 1995; Goldberg & Bee, 1991; OECD, 1989). Solutions proposed to overhaul the educational system minimize and in some cases completely abandon the pressing day-to-day operational needs and the physical comfort and health of teachers and students, requiring them to teach and learn in dilapidated, over or underheated, environmentally toxic, poorly furnished, unsupplied classrooms. As Kozol (1991) has stated in his book *Savage Inequalities*, "the point is that all the school reforms on earth are worthless if kids have to come to school in buildings that destroy their spirits."

In a period when school districts across the country are once again preparing for major construction projects, the argument for the funding for facility management in existing schools is just as, if not more critical than, the design of new schools. Facility management offers the opportunity to maintain and continuously improve the fit between the learning environment and current and future educational philosophies, programs and demographic realities that new designs can only partially anticipate. As school organizations continue to change, buildings will need to be eminently manageable in accommodating those changes.

Further, school officials and the public alike across the U.S. are only now recognizing the potential impact of environmental quality of the school upon the educational process. Environmental quality may affect behaviors, attitudes and performance of students and teachers, that may, in turn, have an impact on organizational effectiveness and educational outcomes. What role these environmental factors play in influencing effectiveness and outcomes, and how they interact in contributing to quality is less understood.

Research Approach & Questions

This dissertation argues that both the problems of understanding the role of environmental quality in the educational process, and of improving environmental quality in schools through the application of behavioral research are symptomatic of the failure to develop and employ context-based investigations of quality in school environments in environment-behavior studies.

With respect to the first problem of environmental quality, studies have investigated only a few environmental qualities, often in isolation from one other. These studies have focused narrowly on classroom settings, ignoring other places for learning within the school, and focused primarily on earlier stages in the facility development process while neglecting issues related to facility management. The narrow focus prevalent in the environment-behavior literature is, in part, a consequence of adopting a epistemological position that conceptualizes the school environment as a collection of discrete variables that can be studied independent of the context they are embedded in. In contrast, this study adopts a qualitative systems view of school environments which acknowledges the complexity of mutual interactions between physical and social variables. The case study approach was adopted in this study to describe these complex interactions.

The first line of inquiry dealt with substantive and theoretical advances in the understanding of the role of environmental quality in school settings in the educational process:

- What is the perception of the nature of environmental quality within the context of schools?
- Within the context of schools, what are the attributes of environmental quality that are perceived to have an impact on educational outcomes?
- What perceived impact does facility management have, if any, on the perception of environmental quality in schools?

With respect to the second problem of improving environmental quality in schools through the application of environment-behavior knowledge, environment-behavior researchers have not fully appreciated the special problems of applying general knowledge to a local context. In the process of applying environment-behavior knowledge, the researcher often confronts issues of perceived relevancy, problems of research translation and resistance to organizational change. In contrast, this study adopts an action research perspective which acknowledges that the school is a complex, purposeful system guided by goals and ideals, and under constant change and adaptation, and that knowledge generated in the local context can be directly and immediately applied and used.

The second line of inquiry therefore dealt with research utilization and methodological advances in environmental description, diagnosis and change from an action research perspective:

- How can environment-behavior research contribute to the improvement of the environmental quality in schools?
- How can environmental quality be assessed in local school contexts?
- How effective is action research in defining problems, providing solutions and increasing knowledge and awareness of environmental quality in schools?

Document Overview

Figure 1 provides an overview of the three parts of this dissertation organized around a model of environmental quality description, assessment, and management described in more detail in Chapter 2.

Part I: General Knowledge of School Environments begins with a more detailed statement of the problem (Chapter 1), provides a literature review of the general substantive knowledge of environmental quality in schools (Chapter 2), and provides a literature re-

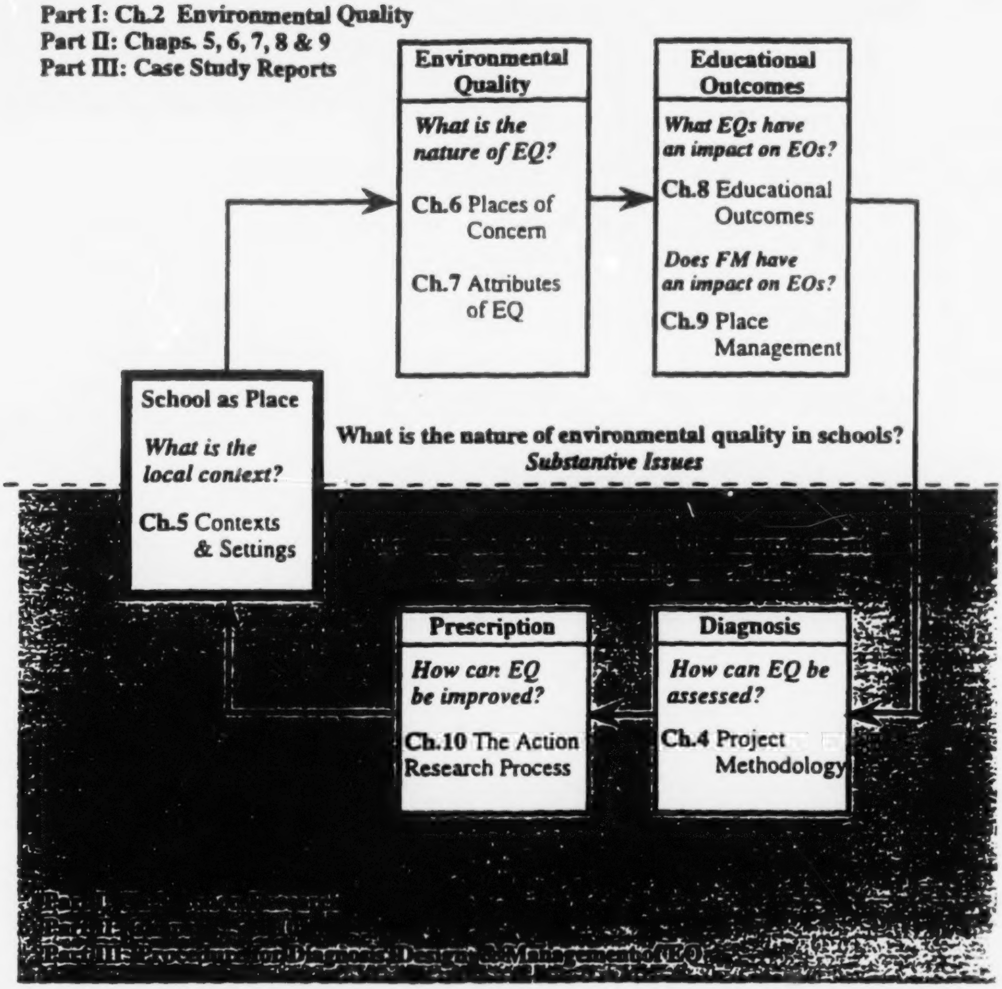
Part I: Ch.2 Environmental Quality
Part II: Chaps. 5, 6, 7, 8 & 9
Part III: Case Study Reports
Environmental Quality
What is the nature of EQ?
Ch.6 Places of Concern
Ch.7 Attributes of EQ
Educational Outcomes
What EQs have an impact on EOs?
Ch.8 Educational Outcomes
Does FM have an impact on EOs?
Ch.9 Place Management
School as Place
What is the local context?
Ch.5 Contexts & Settings
What is the nature of environmental quality in schools?
Substantive Issues
Prescription
How can EQ be improved?
Ch.10 The Action Research Process
Diagnosis
How can EQ be assessed?
Ch.4 Project Methodology
Part III: Procedures for Diagnosis, Design & Management of EQ

Figure 1.
Dissertation Document Overview Mapped onto the Model for Environmental Diagnosis, Design and Management

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view of the general process knowledge concerning the role of action research in schools (Chapter 3).

Part II: Environmental Quality Assessment of Five School Environments presents a project to study of environmental quality in the local context of five elementary schools in the Baltimore City Public Schools (BCPS). While Part III: Case Study Reports and Process Manual provide the research process, instruments and data for the analysis in Chapters 5 through 10.

Chapter 5: Contexts and Settings describes the physical and organizational structure of the five elementary schools within the local urban context of BCPS (Description of School as Place).

Once the local context of each school is framed, Chapter 6: Places of Concern, describes a number of specific environmental concerns within various places in the five school settings, while Chapter 7: Attributes of Environmental Quality answers more explicitly the first substantive question, *what is the perception of the nature of environmental quality within the context of schools,* by analyzing the places of concern with respect to ten researcher-defined environmental quality attributes.

Chapter 8: Environmental Quality and Educational Outcomes answers the second substantive question, *what are the attributes of environmental quality perceived to have an impact on educational outcomes,* by qualitatively analyzing the perceived relationship between environmental qualities and the educational outcomes of student academic performance, student social development and teacher instructional performance, and quantitatively analyzing the relationship between high-priority environmental quality concerns and the percentage of student academic improvement across all five schools.

Chapter 9: Place Management and Educational Outcomes answers the third substantive question, ***what perceived impact does facility management have, if any, on the perception of environmental quality in schools,*** by analyzing the various relationships between placemakers (facility managers, educators, students and the neighborhood community), environmental concerns, attributes of environmental quality and educational outcomes of student academic performance, student social development and teacher instructional performance.

Chapter 4: Project Methodology answers the question of *how can environmental quality be assessed in local school contexts* by adapting an action research process described in organizational development literature to the concerns of environmental and organizational change in schools.

Chapter 10: The Action Research Process answers the final two questions of *how can environment-behavior research contribute to the improvement of environmental quality in schools* by analyzing the influence of research defined indicators of environmental quality in the process of articulating environmental problems and solutions, and *how effective is action research in defining problems, providing solutions and increasing knowledge and awareness of environmental quality in schools* by analyzing the substantive and process results of the action research processes in the five schools in the study.

Chapter 11: Conclusions weaves the local findings from Chapters 6 through 10 within the framework of general environment-behavior research and action research presented in Chapters 2 through 4. Finally, implications are offered for integration of research, design and management of school environments.

PART I:

GENERAL KNOWLEDGE OF SCHOOL ENVIRONMENTS

CHAPTER 1

PROBLEM STATEMENT

Background of the Problem

The deteriorating state of school facilities has been virtually ignored by the public and educational policy makers alike (OECD, 1989). A recent report published jointly by the U.S. General Accounting Office (GAO, 1995) and the Department of Health and Human Services entitled "School Facilities: America's Schools Not Designed or Equipped for the 21st Century" reports that one in five U.S. children are estimated to be affected by poor environmental conditions. Nineteen percent of schools in the U.S. are experiencing indoor air quality problems, 27 percent are reporting poor ventilation, and 19.2 percent report unsatisfactory heating. Other problems in the nation's schools include lack of building security, poor lighting and insufficient noise control. The GAO estimates a cost of $112 billion to alleviate poor environmental quality in the nation's schools.

In 1989, the Education Writers' Association released a study of the condition of school buildings. The study found that 49% of all schools nationwide were built in the 1950s and 1960s, primarily to meet the increasing demand for baby-boom, school-age children (as reported by Walker, 1993). This percentage infers that approximately 41,000 public school buildings will need major renovation or refurbishing between 1995 and 2000 (Goldberg & Bee, 1991). The study also revealed that 21% of school buildings nationally are more than 50 years old and are located primarily in the inner-cities. These buildings have been especially neglected due to short-sighted maintenance and repair policies and are in need of major repair and renovation. The most alarming finding of the study was that over 25% of the buildings were considered inadequate for educational use by state facility directors, their inadequacy being a direct result of serious maintenance and repair needs, existence of environmental hazards, and overcrowding. In addition, another 33% of these buildings will be at capacity in the near future due to population growth and other educational demands.

Recently, a national poll of school administrators indicated that 59% of 5,370 buildings surveyed were described as in poor to barely adequate condition (as reported by Jackson, 1993). The New York City Public School system alone has reported the need for $24 billion in construction over the next decade to repair and upgrade the system's 1,053 school facilities (*Education Week, V12*: 16, January 13, 1993).

Solutions proposed to overhaul the educational system minimize and in some cases completely abandon the pressing day-to-day operational needs and physical comfort of teachers and students, requiring them to teach and learn in dilapidated, over or underheated, environmentally toxic, poorly furnished, unsupplied classrooms. As Kozol (1991) has stated in his book *Savage Inequalities*, "the point is that all the school reforms on earth are worthless if kids have to come to school in buildings that destroy their spirits." Kozol and other social critics have expressed their belief that "the notion that the schoolroom is secondary to the schooling is used as an excuse for pushing the issue of crumbling buildings far down the education agenda" (Jackson, 1993; 6).

The physical deterioration of school buildings is only one aspect of what is ailing the facilities in which teaching and learning takes place. Other issues include: (a) overcrowding conditions, (b) the relationship between educational program and school design, (c) facility management, (d) teacher in-service training, and (e) design collaboration.

(a) Overcrowding Conditions: Overcrowding conditions in existing schools is due to a steady increase in population of school-aged children and continues to be a problem for school districts around the country. The Educational Research Service recently concluded

from an analysis of the latest Census Bureau statistics that the estimated 45,630,000 school-age children in 1990 are projected to increase in number to a high of 49,011,000 in 1998, a 7.4 percent increase (reported in Graves, 1993), with the greatest increase in student-age population projected for urban areas of the United States. The population projections by ethnic group indicate that between 1990 and 2010, the school-age population of African-Americans, Hispanics, and other races will continue to grow faster than that of whites and with many in the urban centers of the U.S. (reported in Wilson, 1989).

(b) Relationship between Educational Program and School Design. The layout and design of the existing classroom created for earlier eras of instruction are in many cases not suitable to current instructional methods and educational philosophies. Some buildings are still organized in the late 19th and early 20th century factory models of schooling in which classrooms are organized for 30-40 pupils in rows and columns, with rooms running along double loaded corridors.

The 1960's in the U.S. brought about challenges to traditional education that forced a radical change in educational philosophy. These educational reform movements favored a teaching model similar to the British informal education model; individualized, self-directed study. As a result, open education, and its physical counterpart, the open classroom, were soon espoused (Barth, 1972; Kohl, 1969; Gross & Murphy, 1968). In terms of architectural innovations, the open space classroom was a milestone in the history of classroom design, replacing the conventional 'egg-crate' school plan. In fact, as many as fifty percent of all schools built between 1967 and 1970 were open space design (Weinstein, 1979).

In the 1980s and now in the 1990s, the earlier egg-crate designs of the 1950s and the pod and cluster open classroom arrangements of the 1960s and 1970s have increasingly failed to provide the most supportive and effective use of space for educational programs reliant on new technologies. In addition, open classrooms have been closing up gradually over the past twenty years due to problems concerning noise and privacy, while egg-crate classes continue to be unsupportive in implementing multiple instructional strategies such as individualized instruction and cooperative learning. New forms of classroom space configurations are only now being considered in relation to educational reforms, such as designs for small schools, small classrooms, portfolio studio arrangements and computer technologies (Genevro, 1990; California Department of Education, 1990; Moore & Lackney, 1994).

(c) Facility Management: There is currently a lack of responsive facility management services to maintain and operate, update and modernize existing school buildings in order to adequately meet the needs of teachers and students. For example, recent abuses in the custodial system of the New York Public Schools have been linked to custodial neglect and the decrepit disrepair of schools in the district (Slater, 1992). In Chicago, a housing court judge resorted to appointing an outside consultant to do much needed window repair work to a South Side school when the Chicago Board of Education failed to deal with the ten year old problem (Ortiz, 1993).

The Organization for Economic Co-operation and Development (1989) cogently describes the role of facility development in improving the quality of the educational process:

> Another development which has its foundations in the widespread movement towards decentralization of educational administration concerns the way in which resources, once provided are used and managed. This is an aspect of the role of school leaders which is often neglected but where they can make a significant contribution to the life of the institution . . . in so far as they lead to greater job satisfaction and better running of the establishment they can be welcomed as contributing to the quality of schooling (p.122).

The problem of unresponsive facility management is most often attributed to deferred maintenance policies due to the lack of general operating funds. In most cases, communities draw maintenance and repair funds from state and local funding which accounts for the majority of their budgets. Larger projects, such as additions or new schools commonly come from bond offerings taken to voters. However, due to the shrinking community tax base and a changing political climate, bond offerings are having more trouble passing, and as a result resources normally used for maintenance are frequently used elsewhere. Reduced funding can be directly linked to reduced, underpaid, and in most cases, undertrained support staff.

A more fundamental problem however, may be that most facility management services are not functionally integrated with either educational policy making or budgetary processes. Decisions are not made in ways which focus comprehensively at a problem. Such is the case with the Milwaukee Public Schools: a building plan proposed in 1992 by the district's superintendent was resoundingly defeated by taxpayers who insisted that resources go first to boosting academic averages and increasing the number of teacher aides. The Superintendent argued that it would be much harder to improve the district's curricula and academic achievement without first addressing the district's infrastructure needs at the same time. The unfortunate result is that very little has been done to date to adequately address either problem (Lawrence, 1993).

(d) Teacher in-service training. There is a lack of in-service training of teachers on how to effectively utilize, maintain and manage classroom space to support their instructional efforts, and to date, there is no literature concerning this topic. Loughlin & Suina (1982), for instance, suggest that teachers have not been trained to look at the environment in non-traditional ways to organize space to maximize learning areas, relieve crowded conditions, and visualize classroom space in new and creative ways. What the magnitude of this environmental competence problem may be, or how to develop strategies for informing teachers in the use of instructional space is presently unknown.

(e) Design collaboration and end-user participation. The collaboration of school staff in the design of new facilities is an issue that receives much attention in construction trade and school administrator professional journals (see any issue of *American School and University* , *CEFPI Journal, School Business Affairs*, or *American School Board Journal*). Unfortunately, the collaboration and participation which does takes place rarely includes the public or the end-user occupants for which the schools are intended to support. This is an area of concern which is a constant source of frustration and feelings of powerlessness on the part of educators. Present models of the educational facility process were originally developed during the dramatic educational system reforms of the 1960s in which state involvement in school finance and governance expanded to include the planning of facilities. Many educators believe that "state legislatures, regulatory agencies and product manufacturers have had more effect on school design and equipment than educators themselves" (Hawkins, 1990).

The Problem of Environmental Quality in Schools

School officials across the U.S. increasingly recognize the impact of the physical environment of the school upon the educational process. Deteriorating conditions due to poor indoor air quality, fire code violations, and deferred maintenance policies are publicly recognized as major contributors of serious health and safety problems for children and teachers. However, as important as health and safety issues are, they are, in many ways, only a symptom of a more complex set of interrelated problems and issues related to the perception of quality in school environments. Environmental quality encompasses a great deal more than the physiological health of occupants: it may affect behaviors, attitudes and performance of students and teachers which in turn, may have an impact on organizational outcomes.

In 1989, the Organization for Economic Co-operation and Development released an International Report on "Schools and Quality" in which they categorize three sets of factors seen as impacting the quality of the educational process. These factors broadly defined are: (1) health and safety factors; (2) environmental factors; and (3) curriculum-related factors. Health and safety factors are seen as the most important, and least controversial; these factors include security and fire protection systems, vandalism, safe storage of dangerous equipment, asbestos abatement, and maintenance of a clean school. Environmental factors include heating, lighting, noise reduction, ventilation, and school size. Finally, curriculum-related factors were seen as the most contentious. This set of factors includes the arrangement and organization of schools both internally and externally, and considers aspects such as sizes of teaching groups, issues of flexibility and adaptability of classroom design and educational program, the need for learning support areas (staff rooms, preparation areas, space for storage and maintenance of equipment and social areas) and other special accommodations (physically disabled).

This confluence of physical factors is generally recognized by educational practitioners as a critical aspect of the educational process affecting quality. What role these factors play in influencing educational outcomes and how they interact in contributing to quality is less understood.

Impact of the Physical Environment of the School on the Educational Process

Research conducted on the impact of the physical environment on the educational process in schools has been inconclusive and focused exclusively on discrete variables with respect to the impact on such educational outcomes as academic achievement. More conclusive results have been documented concerning the relationship between the physical environment and a number of student and teacher behavior and attitudes.

The bulk of the research on the physical environment of the school was conducted at a time when open education and open plan schools were in favor. As a result, much of the research is framed with the historic debate between traditional and open classroom arrangements. Research on new emerging forms of classroom designs and arrangements which respond to new educational reforms in the 1990s are only now emerging.

Academic Achievement

Empirical research hypothesizing a relationship between student achievement and various physical variables is minimal to ambiguous (Weinstein, 1979). These physical variables include acoustics and noise, lighting, interior color, seating position, classroom furnishing layouts and design, windowlessness, spatial density, crowding and stress.

The relationship between achievement in open classroom versus traditional classrooms has been mixed and ambiguous, due in part from various methodological inconsistencies in defining what is an open or traditional classroom (Gump, 1987; Horwitz, 1979; McGuffey, 1982; Weinstein, 1979).

There is some evidence that thermal factors affect student achievement (Peccolo, 1962; Stuart and Curtis, 1964; Hamer, 1974 all cited in McGuffey, 1982; Wyon, 1970).

To date, the most significant research evidence supporting the direct influential role of the physical variables on student achievement concerns building age and condition (Cash, 1993; Chan, 1979; Edwards, 1991; Guthrie, et. al., 1971; McGuffey & Brown, 1978; Plumley, 1978), class size (Achilles, 1992; Bourke, 1986; Glass et al., 1982; Gump, 1987) and school size (Barker & Gump, 1964; Fowler, 1992). The greatest negative relationship between school size and student performance being most prevalent in urban schools (Fowler, 1992).

Behavior and Attitudes

Unlike the research conducted on the relationship between the physical environment and student achievement, there is ***considerable evidence*** that the physical setting directly affects both student and teacher behavior and attitudes. Acoustics and short-term noise have been found to be linked to classroom distraction, student and teacher morale and preferences (Evans & Cohen, 1987; King & Marans, 1979).

Increased spatial density and crowding influences various behavioral problems and satisfaction (King & Marans, 1979), aggressive behavior, movement and distraction on complex tasks (Cramer, 1976 in McGuffey, 1982; Evans & Cohen, 1987; Loo, 1976).

Thermal comfort has been shown to influence task performance, attention spans and levels of discomfort (Humphreys, 1978; McGuffey, 1982; King & Marans, 1979; Wyon, 1970).

Seating position affects teachers' evaluations of students (Daly & Suite, 1982); students in front of classroom engage in more of their own work, are more attentive and likable by the teacher, have the highest rate of verbal interaction and participation (Adams & Biddle, 1970; Koneya, 1976; Schwebel & Cherlin, 1972); while MacPherson (1984) found that students tend to sit in areas of the classroom in accordance with their goals and will select seats that provide opportunities for action and control of each other and the teacher.

Classroom furnishing layouts designed to accommodate individualized instruction have been found to influence such student behaviors as movement patterns, purposefulness, disruptiveness and disorderliness, persistence and participation and attitudes toward class and other students (Winett, Battersby & Edwards, 1975; Weinstein, 1979).

Private places in classrooms provide opportunities for conversations and solitude (Mack, 1976); open classroom designs may offer more opportunities for privacy than traditional designs (Weinstein, 1979); teachers' adjustments of their activities to reduce distractions correlate with the amount of non-structural walls in the classroom (Ahrentzen & Evans, 1984). However, open schools high visual exposure can cause distraction (Weinstein, 1979; Gump, 1987), although modifications of open plan settings that provide better defined activity pockets or privacy nooks help prevent some of distractions (Moore, 1987; Weinstein, 1977).

Windowless classrooms have been found to influence student and teacher attitudes negatively (Ahrentzen, Jue, Skorpanich & Evans, 1982; Weinstein, 1979; Wyon, 1970), but no consistent pattern of student performance has been attributed to the absence of an outside window (Ahrentzen, et. al, 1982; Larson, 1965 in McGuffey, 1982).

Vandalism is most likely to occur in school building locations where students gather in groups to play and socialize (Zeisel, 1976).

Class sizes dictate the frequency and type of student-teacher interaction. As the size decreases interaction increases (Bourke, 1986), classroom management improves, teacher stress decreases and teachers are more likely to try innovative techniques (Miner, 1992).

School size, if smaller, offers greater opportunities for participation in community and other social organizations. A smaller school size also increases opportunities to exercise leadership roles, the number of courses offered, and student satisfaction (Barker & Gump, 1964). A lower incidence of crime levels and less serious student misconduct than larger schools will be encouraged, as well as a sense of responsibility and meaningful participation, particularly among students who have academic difficulty and come from lower socio-economic backgrounds (Garbarino, 1980).

Research on the comparison of open to traditional classrooms indicates that open classrooms promote more peer interaction and cooperative behaviors (Downing & Bothwell, 1979). Also, teachers hold more positive attitudes about their jobs and their schools, students' attitudes and self-images are generally better (King & Marans, 1979), students are more likely to secure acoustical and visual privacy (Brunetti, 1972), teachers experience greater feelings of autonomy and satisfaction, an increased interaction among teachers and an overall enjoyment in teaching regardless of persistent noise problems. Students as well, experience an increased sense of autonomy, and engage in a greater variety of interactions and activities (as reported in Weinstein, 1979). However, Cotterell (1984) did find that transitions to new activities in open plan classrooms took longer and student 'off-task' behavior was greater than in traditional plan schools.

Neglected Areas of Research

The environment-behavior literature does not address many issues that may be of concern to schools: facility management, places for learning, different activities, building aesthetics and appearance, and organizational effectiveness.

A variety of places for learning. The majority of literature emphasizes the prime importance of the classroom setting where apparently most of the learning takes place. This assumption is based on the fact that students spend the majority of their school day in the classroom and it is here that the most significant contribution can be made with respect to the physical environment. However, educators freely admit that learning is a continuous process and can happen in any number of places in addition to the classroom, including the gym, the cafeteria, the playground, the neighborhood and the home:

- What is the use profile of the school building and grounds aside from the classroom? How might social learning experiences in different places within the school contribute to a child's social development and/or morale and satisfaction of school in general?
- Do children and teachers have places to go that afford some level of privacy and control over their affairs; a place that might provide a sense of ownership and personalization?

- How does the design and management of media centers, libraries, gyms, corridors and hallways, restrooms and lunchroom cafeterias contribute to the overall quality of a child's learning experience?

A variety of activities. Based on the notion that academic activities contribute most directly to a child's learning performance, the range of school activities investigated is rather narrow:

- Related to the investigation of classroom settings, how is the facility used for activities other than taking tests and answering questions, and how well does it provide the opportunity for these other activities?
- What are the other functions the school provides as a place and how supportive is it of these other functions? For instance, how does the school support and foster the affordance of various social and community activities?

Building aesthetics and appearance. How aesthetic preference contributes to the climate and meaning of a place for occupants has not been explored:

- What is the role and impact of building aesthetics and appearance on student and teacher attitudes?
- What are the preferences of students and teachers with respect to appearance?
- What are the aspects of the school that foster a sense of delight, which aspects do not?
- What are the kinds of meanings that particular elements of the building elicit in students and teachers, and what effect do they have on their morale?

Organizational effectiveness. Organizational issues have been ignored in favor of individual and inter-personal variables:

- What is the relationship, fit or correspondence between a particular educational program philosophy and the layout of the school facility or its typology?
- How does the environmental quality of a school facility contribute to the organizational effectiveness of the school?

Facility management. The impact of facility management on the effectiveness of ongoing educational activities has not been investigated:

- How does attention to the management of the physical environment contribute to an effective educational setting?
- What is the relationship between educators and facility managers and how does the level of perceived control over the conditions of the work setting play into the morale and satisfaction of teachers?
- To what extent is the management of environmental quality in the school a responsibility or natural role of the facility management staff versus the educational staff and students?

The Problem of Environment-Behavior Research on School Environments

Effectiveness in Environment-Behavior Research

Overall, little progress has been made in environment-behavior research concerning the relationship between the physical environment and the educational process on educational outcomes such as academic achievement (Evans, in press; Weinstein, 1979). School effects literature within educational research provides no more support than do environment-behavior researchers. As McPartland and Karweit (1979) report: "differences in school environments are not the major causes of differences in students' achievement. Such is the conclusion drawn from the most publicized studies . . . by many researchers and critics of American education" (p.371). This conclusion is influenced partly from the recognition that there are many non-school influences on students that cannot be accounted for that may affect outcomes as well, such as home and community variables (McPartland and Karweit, 1979; 371-372).

Why such limited, ambiguous results in over thirty years of investigation? Three underlying factors can be identified for the lack of progress in the empirical research on educational environments: (a) *theoretical shortcomings*: the lack of theoretical models in the field of educational environments to guide empirical research; (b) *methodological limi-*

tations: the overemphasis on unidirectional relationships between variables to the exclusion of contextually- and ecologically-based research, and (c) *epistemological biases*: reliance of the prevailing scientific method based on the philosophy of logical positivism.

Theoretical Shortcomings. Research on educational environments has operated without a comprehensive theoretical framework from which to progress and build on previous research findings. Research conducted thus far has not been derived from an explicit theoretical model which takes into account the myriad of variables in the educational setting, from socio-economic factors, organizational structure and policy to psychological, social and pedagogical factors (Moore & Lackney, 1993). As a result, the research does not build on any collective understanding of what constitutes quality in school environments. Weinstein (1979) and Gump (1987) provide the only comprehensive reviews to date on the topic of the physical setting of the school, yet do not offer any theoretical models. The possibility that more positive attitudes and behaviors may eventually result in improved academic achievement and other forms of learning outcomes has yet to be suggested (Evans, in press; Weinstein, 1979).

Methodological Limitations. The problems of research methods have led to premature and misleading conclusions (McPartland & Karweit, 1979). The research on school environments has focused on the relationship between discrete, physical, behavioral and attitudinal variables with the goal of establishing precise cause and effect linkages, despite the recognition that social influences are generally reciprocal and interactive rather than unidirectional (Wegner, 1978; in Anderson, 1982). As a result, studies have (a) investigated only a few environmental factors without reference to other mediating social and organizational factors; (b) focused narrowly on classroom settings while ignoring the role of a variety of place-settings for learning within and around the school; and (c) focused primarily on earlier stages in the facility development process (e.g. programming and design), neglecting issues related to facility management.

Weinstein (1979) argues that "researchers not only *acknowledge* the complexity of environment-behavior relationships but also design and interpret studies to *reflect* this complexity" (p.600, emphasis author's). For example, Anderson (1982) suggests that designs such as cross-sectional studies may not be adequate in school effects research: school effects accumulate slowly and cross-sectional designs may not provide accurate estimates of the effect of environmental quality on selected educational outcomes (p. 408). Further, due to the need to gather field-based behavioral observations, experimental and quasi-experimental methods are complex to design owing to the difficulty of assigning subjects randomly, the lack of control over confounding variables, the need to conduct measurements unobtrusively, and the restrictions imposed by school teachers and administrators.

Epistemological Biases. More fundamentally, the narrow focus prevalent in the environment-behavior literature on learning environments is a consequence of the espousal of a positivist epistemology that legitimizes the conceptualization of the school as a collection of discrete interacting properties, components and attributes that can be studied independent of contextual factors within which they are embedded. As a consequence of this philosophical presupposition, the majority of the environment-behavior literature on school environments has avoided investigating the problem of environmental quality from the perspective of the school as a complex system of interacting organizational, social, individual, physical and temporal dimensions. Instead, research has favored a strategy similar to school effects research, which is to search for the salient factors presumed to affect educational outcomes. For the much larger and diverse field of school effects research, the problem of identifying school factors that impact academic achievement has been a "dismal science" (Heyns, 1986; 325) that "fail[s] to provide any consistent evidence" (Good & Brophy, 1985).

One response to this impasse, in educational research, has been the development of a diverse body of research identified as 'effective schools' research that provides descriptive accounts of effective schools, those schools that do better than might be expected based on their social composition or past performance, and then offers optimistic prescriptions for school improvement (MacKenzie, 1983; Cohen, 1981, 1982 cited in Heyns, 1986). Conceptually, the effective schools literature and the school effects literature are quite different. Effective schools research views schools as holistically complex systems with numerous levels of authority and influence, and focuses primarily on organizational variables (and as such deals with issues irrelevant or peripheral to the central concerns of school effects studies). Effective schools research also holds the view that some schools are more effective at promoting achievement than others, and that descriptive accounts of the organization and management of such schools can serve as guidelines for developing programs (Brookover et. al., 1979 in Heyns, 1986). Effective schools research has many methodological flaws, relies in many cases on flimsy evidence and has few statistically impressive results (Heyns, 1986; 326). Nevertheless, case study and firsthand accounts convincingly document improved morale, greater satisfaction with teaching and learning, and a host of intangible benefits that result from effective schools programs.

Addressing Problems of Environmental Quality in Local Contexts

One of the goals of environment-behavior research is "concerned mainly with the contributions of scientific disciplines toward [sic] the creation of improved methods problem solving as well as understanding the nature of human responses to the environment. The more fundamental objective is towards achieving an optimum environment for man" [sic] (Sanoff & Cohen, 1970; VI). Twenty years later, major figures in the environment-behavior field have admitted that the field has failed to have any impact at all on the quality of the environment (see especially General Plenary in Hardie, Moore & Sanoff, 1989). Schneekloth (1989) explains this failure of impact by asserting that:

> ...we have placed limitations on what constitutes legitimate forms of knowledge and inquiry. Because we have borrowed so heavily from the social sciences in light of a lack of explanatory theories of society in design and planning, we have inherited assumptions grounded in logical positivism. As such, we have only accepted knowledge which has been empirically verified...it is an impoverished description of the total of human experience. And it is inherently dangerous in the context of a goal that seeks human emancipation because empiricism privileges the status quo....If our goal is human emancipation, then theory cannot be divorced from action (p.24).

Environment-behavior research on school environments has not made a difference in the environmental quality of schools in part because it has not, in many cases, addressed problems, concerns, issues and questions of relevance to educational practitioners. This is due, in part, to the different interests, focus, objectives and goals of researchers and practitioners. For example, the environment-behavior researcher may be interested in the relationship between class size and achievement across multiple sites, while the educational practitioner, faced with the reality of large class sizes, may be more interested in addressing the problem of organizing space in an existing classroom to support small group instruction. As a consequence of this incongruency between the problems conceptualized by the researcher and those experienced by the practitioner, the results of empirical research have not been utilized and have been ineffective in addressing practical problems in local contexts and situations.

Research Questions

With respect to these two problems of understanding the role of environmental quality in the educational process, and of improving environmental quality in schools through the application of behavioral research in architecture suggested two lines of inquiry dealt with the substantive and theoretical questions and research utilization and methodological questions:

Substantive & Theoretical Questions

1. Environmental Quality

What is the perception of the nature of environmental quality within the context of schools?

(1a) What does the research literature report concerning the nature of environmental quality in schools;

(1b) How do occupants perceive, if at all, the nature of environmental quality generally;

(1c) How do occupants perceive, if at all, the nature of environmental quality in their particular school;

(1d) To what extent do occupants perceive they have control over the state of environmental quality in their particular school.

2. Educational Outcomes

What are the attributes of environmental quality that may have a perceived impact on educational outcomes?

(2a) What does the research literature report concerning the influence of environmental quality on educational outcomes;

(2b) What do occupants perceive, if at all, as the influence of environmental quality on educational outcomes generally;

(2c) What do occupants perceive, if at all, as the influence of environmental quality on educational outcomes in their particular school.

3. Facility Management

What perceived impact does facility management have, if any, on the perception of environmental quality in schools?

(3a) What does the research literature report concerning the impact of facility management on the perceptions of environmental quality in schools;

(3b) What do occupants perceive, if at all, as the aspects of facility management that may have an influence on environmental quality of the school generally;

(3c) What do occupants perceive, if at all, as the aspects of facility management that may have an influence on environmental quality in their particular school.

Research Utilization and Methodological Questions

4. Environment-Behavior Research

How can environment-behavior research contribute to the improvement of the environmental quality in schools?

5. Assessing Environmental Quality

How can environmental quality be assessed in local school contexts?

6. Action Research

How effective is action research in:

(i) defining problems of environmental quality in schools;

(ii) providing solutions to problems of environmental quality in schools; and,

(iii) increasing the knowledge and awareness of teachers and staff regarding the physical setting as a tool in supporting their instructional activities.

CHAPTER 2

ENVIRONMENTAL QUALITY IN SCHOOLS

This chapter addresses the theoretical shortcomings and methodological limitations associated with the problem of environment-behavior research on schools with respect to environmental quality. Environmental quality will first be defined by reviewing the broader concept of quality and how it has been conceptualized in education. Next, a number of models for assessing environmental quality in school settings are reviewed and critiqued. Finally, a conceptual framework for environmental quality in school settings is developed that responds to the literature critique.

Conceptualizing Environmental Quality

The Concept of Quality

The word 'quality' has a variety of connotative meanings and is multi-faceted. There are many common uses of the term quality that can confuse the use of the term in research. Quality may imply that something or someone is good or excellent in the phrase 'he is a quality teacher.' Further, quality is often used in contradistinction from 'quantity' in the sense that qualitative assessments are made intuitively because the nature and complexity of the phenomenon observed defy segmentation into measurable parts (OECD, 1989; 28). These uses of the term are not to be implied here. A 'quality' is commonly defined by Webster's Dictionary as a characteristic element, attribute, nature or property of some thing, or more generally "that which belongs to something and makes or helps to make it what it is." Quality can also be understood as "any characteristic...which may make an object good or bad...the degree of excellence which a thing possesses."

As these two definitions indicate, quality can be a used in either *descriptive* or *normative* terms (OECD, 1989; 27). A descriptive quality of a classroom or school would denote that that classroom or school has a number of qualities or characteristics that make it what it is. For example, a classroom might be arranged in a particular way, have a variety of learning spaces, and have a view to the playyard, and accommodate a class of twenty-five students and one teacher. A normative quality would imply a judgment of good or bad placed on a classroom or school: a particular school might be judged to be of poor or excellent quality with respect to social climate or achievement. A classroom, for instance, may be organized or disorganized, bright and cheerful or gloomy, it may be a 'special place', comfortable or easy to concentrate in, and so on. Normative qualities can denote either an interval or degree of worth or excellence, or simply denote a single nominal statement of good or excellent.

Quality in Schools

There are, in addition to definitional aspects of quality, different approaches and dimensions of quality to consider with respect to education. OECD (1989;135) summarizes four critical questions with respect to defining quality in schools:

1. What level of schooling, macro or micro — is under scrutiny and from where does the inspiration of that scrutiny originate — committed political reform or detached academic analysis?
2. What are appropriate goals and objectives, how broadly should they extend beyond those specifically to do with student learning, and how are priorities among them to be determined when matters are in dispute?
3. Quality of what — how far does the concern for improvement embrace non-cognitive goals?
4. Quality and equality — quality for whom?

The OECD questions open up a whole area of discussion concerning the social, cultural and political values that come into play when the concept of quality is invoked in education. Concerns for quality in education are complex and political at the societal level. Societal goals for quality in education have been conceptualized as a dialectic between equity and equality (Bacharach, 1990): between being responsive to local needs of the community (equity), and acting to uphold the ideal of equal standards of opportunity across all communities (equality). These philosophies represent an on-going political debate at all levels — federal, state, school boards, local communities — of school governance in the U.S. Many of the societal goals for quality in the public school system are often conflicting and therefore judgments of value must become the starting point for any discussion of quality.

In the current debates over educational reform of the public educational system (e.g., Usdan & Schwarz, 1994), the societal contraints for stronger standardization of academic instruction and performance to measure accountability of schools in educating children on the part of the Federal government, represented by the Goals 2000: Educate America Act (a top-down reform movement), are in direct conflict with many local site-based management teams in schools (a bottom-up community-based reform movement) who may claim that quality schools should emphasize different assessment methods such as portfolios that develop other skills and capacities in their children not addressed by standardized tests.

School districts are continually redefining and revisiting their mission with respect to community and societal goals. In the current wave of reform, school districts are especially under pressure to balance societal values, federal and state mandates for standardization against public and local community concerns for shared decision-making, participation, and control of the schools (Bacharach, 1990). As a consequence of the equity/equality dialectic, it is difficult to define quality uniformly for all schools and districts. The task of defining the criteria for assessing quality in a particular school becomes a negotiated effort between all stakeholders in the process. The process of describing and assessing environmental quality is often viewed as "the search for common ground (mutual self-interest) among different constituencies, each with its own axe to grind" (Becker, 1990; 175).

Models for Assessing Environmental Quality in School Settings

What constitutes environmental quality in schools is dependent on the clarification of both environmental variables and critical outcome variables related to quality (Moore, 1984). There is a constant tension concerning the focus of quality between the well-being of consumers (e.g., measures of satisfaction, health, morale) and the efficiency of the production process (Moore, 1984; 104) (e.g., productivity and performance). Environment-behavior studies (EBS) have historically emphasized and advocated research on outcomes of user well-being. Educational evaluation research and practice, while maintaining a broader focus, is nevertheless most concerned with 'bottom-line' indicators of quality such as outcomes of student achievement and teacher performance.

The position take here with respect to the issue of outcome variables is that these will need to be negotiated locally by each school. Some outcomes will be standard and broadly accepted due to the close alignment of many societal values of equality, while others may vary with respect to local concerns, problems, goals and focus. In anticipation that a broader set of outcomes will be selected than represented in the environment-behavior literature, those aspects or *descriptive* qualities of the environment that are considered the "heartland" of EBR (Moore, 1984) such as privacy, crowding, and so on, here will be referred to as "attributes of environmental experience" following Weisman (1982) and shall be conceptualized as a subset of antecedent conditions of *normative* environmental qualities, along with other social and organizational antecedents.

The research literature is replete with models for conceptualizing and assessing environmental quality in schools. Environmental quality has been conceptualized from both global and discrete theoretical perspectives. Global conceptualizations view the school as a single treatment that impacts multiple or comprehensive outcomes. Because of the simplicity of a single global measure it is relatively easy to compare quality across more than one site. As a consequence of looking at the setting as a whole, global measures also provide an impression of a "total quality" of a setting. One disadvantage, therefore, of global conceptualizations is that they do not allow for the understanding of the interplay of environmental features and characteristics. This approach is often adopted by practitioners who's aim is to affect policy decisions.

Discrete conceptualizations treat the environment as a set of discrete and independent variables; typically only one or a few such variables are studied, with other aspects of the environment held constant. The vast majority of studies approach the assessment of environmental quality in terms of discrete variables. The advantage to this approach is that salient variables that significantly impact educational outcomes can be identified, thus eventually forming the basis of educational policies aimed at improving the conditions of school settings. Discrete studies, however, do not often explore the interactive effects between intervening variables that may mediate effects of the independent variable upon the dependent outcome variable. This approach is often adopted by social science researchers with the primary aim to advance the knowledge of the discipline.

These two general approaches to conceptualizing environmental quality, rather than representing exclusive alternative views of assessment, can be viewed as being at the ends of a hierarchical continuum from discrete definitions to global definitions (Lackney, 1994b). Table 2.1 further illustrates the nature of this continuum from the discrete-component approach, to the global-component approach, to composite approach, and finally the global-attributes approach. Salient variables and theoretical orientations will vary depending on the purpose, scope of the assessment, and the approach adopted for an assessment.

Discrete-Component Approach

The discrete component approach hypothesizes links between discrete social and physical environmental variables presumed to be indicators of quality of educational outcomes, such as academic achievement. The majority of research on indicators of quality adopt this approach. In the field of educational research, for instance, the discrete-component approach is represented by school effects research (Good & Brophy, 1985) and process-product research (Brophy & Good, 1985). The goal of this approach is to test variables hypothesized to have an impact on various outcomes as a means of theory building and to occasionally or indirectly influence and inform educational policy. One example is class size research. There is considerable agreement in the research literature, that when class sizes are decreased, student achievement increases (Achilles, 1992; Bourke, 1986; Fowler, 1992). Fowler (1992) has concluded that attitudes, voluntary participation and achievement all increase in smaller classes relative to larger classes. Bourke (1986) tested a causal model linking student, school, and teacher background information, class size, teaching practices, and mean class mathematics achievement. He found that the teaching practice variables that varied with class size and affected achievement were teachers' grouping practices, frequency and type of interaction with students, some aspects of teachers' questioning behavior, the amount of homework given, and the noise level tolerated during lessons.

The discrete-components approach narrowly limits the definition of quality to those aspects of the environment that can be most easily defined, measured and linked either causally or correlationally to a limited set of outcomes. Historically, these types of scientific studies have failed to provide any consistent evidence for a relationship between general school resources and student outcomes (Good & Brophy, 1985). Rutter (1983, in Good & Brophy, 1985) argues that the school's influence on student achievement is underestimated due to outcome variables measured, the predictor variables measures, and the extent of variation of the predictor variables. Most surveys consider a narrow range of school variables and focus on financial or physical resources rather than the internal social life of schools (Good & Brophy, 1985; 571).

Global Component Approach

The Global Component Approach commonly relies on expert judgment in the assessment of various physical components and properties of the school setting deemed salient by a research team. Judgments are weighted and summated to form a single value of quality that can be compared across settings or to the same setting at different times. The goal of this approach is to develop baseline measures and benchmarks across the largest number of sites in order to establish standards and guidelines. This approach characterizes much of the work in post-occupancy evaluation (Preiser, Rabinowitz and White, 1988). An example of this approach is the *Guide to School Facility Appraisal* (Hawkins & Lilley, 1992). Discrete component variables of the physical environment are identified and appraised according to the following criteria: school site (e.g. size, location, topography, landscaping, etc.), structural and mechanical features (barrier-free requirements, roofs, foundations, friable asbestos and toxic materials, HVAC systems, etc.), plant maintainability of various physical components, building safety and security variables (e.g. stairways, heating units, emergency lighting, classroom doors, building security systems, flooring, etc.), and educational adequacy (size and location of learning areas, adequacy of storage, etc.). Each component category is rated and summated to provide an overall score. The Council of Educational Facility Planners International (CEFPI) hypothesize a significant relationship between this assessment score and learning outcomes as measured by standardized test scores. The *Where Children Learn* research project currently being conducted by the CEFPI intends to test this hypothesis using data gathered from a modified version of this assessment instrument.

The global-components approach limits the definition of quality to those aspects of the environment that can be easily measured and judged by experts. This approach de-emphasizes subjective perceptions of quality from occupants, in favor of more objective expert judgments of quality based on professional standards. The measure of quality may not reflect the real quality experienced in the setting. This approach, as represented by the post-occupancy evaluation (POE), does not take organizational goals into consideration, but focuses on societal standards (e.g., building codes, design standards, and environmental regulations) that may not reflect the full range of problems being experienced in a particular setting.

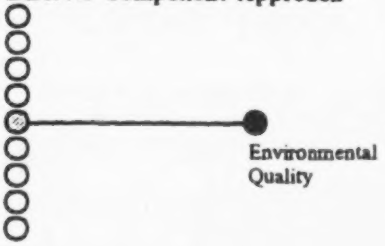
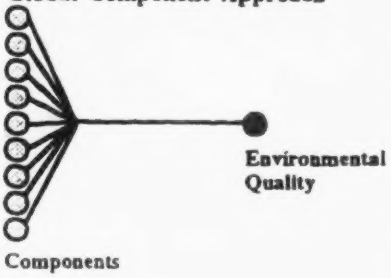
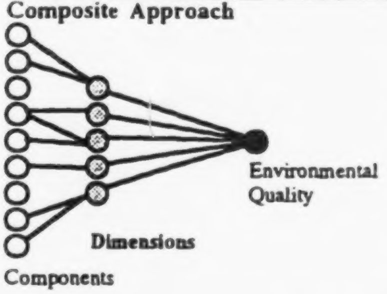
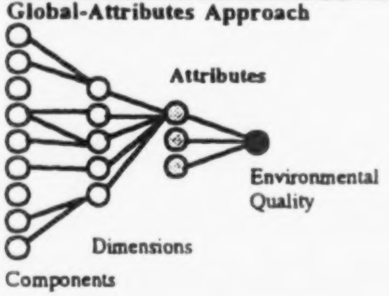
The Composite Approach

The Composite Approach conceptualizes environmental quality as the result of ecological interactions between a limited number of environmental dimensions. These dimensions are then assessed with respect to selected educational outcomes. This approach shares similar goals of the Discrete-Component approach. An example of a composite assessment approach is school climate research, a stepchild of organizational climate (Anderson, 1982). School climate has been conceptualized as dealing with broad constructs such as total environmental quality within the school organization.

School climate is hypothesized to influence student outcomes such as behavior, values, and personal growth and satisfaction. Several categories of variables have been found to be tied to climate and/or student outcomes: (1) *ecology variables*: building characteristics, size, etc.; (2) *milieu*: teacher and student body characteristics, teacher and student morale; (3)*social system variables*: administrative organization, instructional program, ability grouping, administrator-teacher support, etc.; (4) *cultural variables*: teacher commitment, peer norms, cooperative emphasis, expectations, emphasis on academics, rewards and praise, consistency, consensus, clear goals. Dependent variables under study include school discipline, student aspirations, achievement, control attitudes, attendance and behavior, bureaucratic structure, and climate dimensions and type.

The global-components approach limits the definition of quality to those aspects of the environment that are concerned with the perception of climate. The component approach, represented by organizational climate, has been a difficult task for researchers ow-

Table 2.1
Approaches to Conceptualizing Environmental Quality
(Adopted from Lackney, 1994b)

	Variables	Theoretical Orientation	Assessment Models
Discrete Component Approach  Environmental Quality	Components *Sensory:* temperature lighting acoustics & noise olfactory environment *Spatial:* classroom size school size	Environmental Deterministic/ Interactional	Class size research (Achilles, 1992; Bourke, 1986; Glass et al. 1982). Indoor Air Quality
Global Component Approach  Environmental Quality Components	Components *Building systems* (HVAC, lighting, security, etc.) *Site characteristics* *Building characteristics* (classroom layout & size, school size, etc.) codes & regulations	Environmental Deterministic/ Interactional	CEFPI Guide to School Facility Appraisal (CEFPI, 1992) and other global expert judgment appraisal systems (such as POEs)
Composite Approach  Environmental Quality Dimensions Components	Dimensions Organizational Social Personal Physical Temporal *or* Social System Cultural Milieu Ecology	Ecological/ Interactional	School and social climate research (Anderson, 1982)
Global-Attributes Approach  Attributes Environmental Quality Dimensions Components	Attributes Comfort Privacy Social Interaction Crowding Functionality Safety & Security Aesthetics & Appearance Personalization etc.	Systemic/ Ecological	Classroom Environment Scale (CES) (Moos, 1979)

ing to the many existing definitions for climate. There are too many variables to easily document, and it is difficult to determine what the greatest contributing factors influencing quality in a particular setting are.

The Global-Attributes Approach

The Global-Attributes Approach represents the approach most closely adopted by Environment-Behavior Research (EBR). This approach to conceptualizing environmental quality begins with the underlying perception and experiences of people in relation to objective events, activities and environments. From this perspective, environmental quality is a perception based on the subjective experience of the environment, and is influenced and filtered through organizational, social, physical and temporal dimensions of the school. This perception is then matched against several norms, values, preferences, ideal images or notions of environmental quality; the result being an evaluation of the perceived situation as good or bad. This evaluation may affect certain behaviors, decisions and attitudes (Rapoport, 1977; 48). The goal of this approach is to both develop theory and to provide relevant solutions to local conditions with immediate application.

The Classroom Environment Scale (CES) developed by Moos (1979) provides one example of this type of approach, The CES identifies which aspects of the psycho-social environment of classrooms are salient to students and teachers. It conceptualizes the environment as a dynamic social system that includes not only teacher behavior and teacher-student interaction but also student-student interaction. Rather than relying on the ratings of outside observers, the classroom environment is defined in terms of the shared perceptions and experiences of the people within that environment. This has the dual advantage of characterizing the class "through the eyes of the actual participants and of soliciting information about its long-standing attributes in a manner more parsimonious than observational methods" (Moos, 1979; 139). Three sets of variables form a conceptual framework for the CES: (1) relationship variables, (2) system maintenance and change variables, and (3) personal growth or goal-oriented variables. Given this framework, Moos used several strategies to select initial dimensions for the CES. Moos reviewed prior research and literature for descriptions of classroom milieus, observed classes in each of several high schools and conducted structured interviews with teachers and students. Interviews with students focused on their perception of the important aspects of classroom settings and how these aspects differ. Interviews with faculty focused on their teaching styles and the kinds of classrooms environments they tried to create. Ultimately, Moos identified conceptual dimensions on the basis of this data and wrote questionnaire items he thought to be indicators of the dimensions.

The global-attributes approach limits the definition of quality to those aspects of the environment that are directly perceivable by the users of that environment. This approach focuses primarily on the purposes and goals of individuals and small groups without considering the role of the organizational mission in framing the range of qualities experienced in a particular place. Although little school environment research has investigated organizational level analysis, some research has begun in the domain of work environments (Becker, 1990; Steele, 1986) that may have some implications for educational environments research.

Any model that is adopted for assessing the quality of the environment will necessarily have certain limitations. The assessment model must make certain compromises: between (a) discrete or global conceptualization; (b) methodological rigor and local relevance; (c) narrow or wide range of outcome variables; and (d) expert-judgment and occupant preference and perception. Many of these choices will depend on the purposes, goals and values driving the assessment project.

A Conceptual Framework for Environmental Quality in School Settings

When the quality of the environment is invoked, it implies an evaluation of the worth or value of that environment. Environmental quality is, by its very nature, a concept that is related to beliefs, thoughts, feelings and attitudes that influence judgments, the setting of goals, and identification of needs (Zube, 1980). As such, it is critical to approach environmental quality as a complex, multi-faceted construct that must be assessed from the perspective of individual, organizational and societal experience, activities and goals (Witzling, Childress & Lackney, 1994). Here the term 'quality' will denote normative judgments — judgments to the degree to which an outcome meets a particular set of criteria, standards, goals or objectives. As a consequence of quality being based on individual, inter-personal and organizational perceptions and preferences, it inevitably is conceptualized differently within, and between, various groups of people.

Attributes of environmental quality can be categorized as being reflective of individual and social perceptions, experience and purposes, as well as organizational missions and societal values, all in potential conflict with each other. Environmental quality is created, experienced, evaluated and maintained throughout the life of the school by various stakeholder groups both inside and outside of the school organization. The organizational mission, individual and group purposes, objectives and goals, are indirectly influenced by a wide variety of societal values emanating from extra-organizational groups such as teachers unions, government regulators, the building industry and design professionals, and by various school district groups such as the school board, district administration and management. School occupants (students, teachers, administrators, and staff) ultimately experience and maintain environmental quality through their own interactions with both the physical and social environment.

Figure 2.1 illustrates a process model of environmental quality diagnosis, design and management that provides a framework for conceptualizing this multi-faceted aspect of quality. The process describes the school as a system of interacting dimensions producing several levels of outcomes. For the purposes of this investigation, of interest here are the interactions between physical dimension and the other three dimensions of the school (e.g., organizational, group, and individual). The first set of process outcomes are conceptualized as attributes of environmental quality. These attributes act as antecedent independent variables on a series of second-order outcomes at each level of the school. Through an environmental assessment process, this second set of outcomes are matched against certain criteria which form locally-defined indicators of environmental quality. The final step in the model involves the diagnosis and prescription of environmental problems that feed back to initiate an organizational change and process intended to improve environmental quality.

School as a System of Interacting Dimensions

The school acts as an ecologically interacting whole that can be conceptualized as consisting of organizational, group, individual and physical dimensions. The organizational dimension embodies the mission of the school, its structure, programs and processes. The group dimension of the school consists of the characteristics and goals of various informal groups between students, teachers, principals, staff, and parents. The individual dimension comprises the various characteristics and goals of students, teachers, principals, staff and parents. Finally, the physical dimension of the school includes various microenvironmental characteristics such as physical properties and spatial components of place, as well as, the overall building typology (i.e., configuration of spaces).

Attributes of Environmental Quality

Attributes of environmental quality arise out of a dynamic interaction between various levels of the social environment of a place (e.g., organizational, group and individual dimensions) and the physical dimension within which it operates. The environment can be conceptualized as having particular qualities with respect to each of these dimensions. At the individual dimension, the environment is experienced as affording some degree of physical comfort, personal safety, sensory stimulation, crowding, orientation, and aesthetics or appearance. Within the dimension of the group, the environment can be seen as supporting the experience of social climate within the school (i.e.,privacy, classroom adaptability, social interaction, personalization and ownership. Within the organizational dimension of the school, environmental quality can be viewed as providing some degree of correspondence or fit with the organization with respect to safety and security,classroom adaptability,building functionality and flexibility.

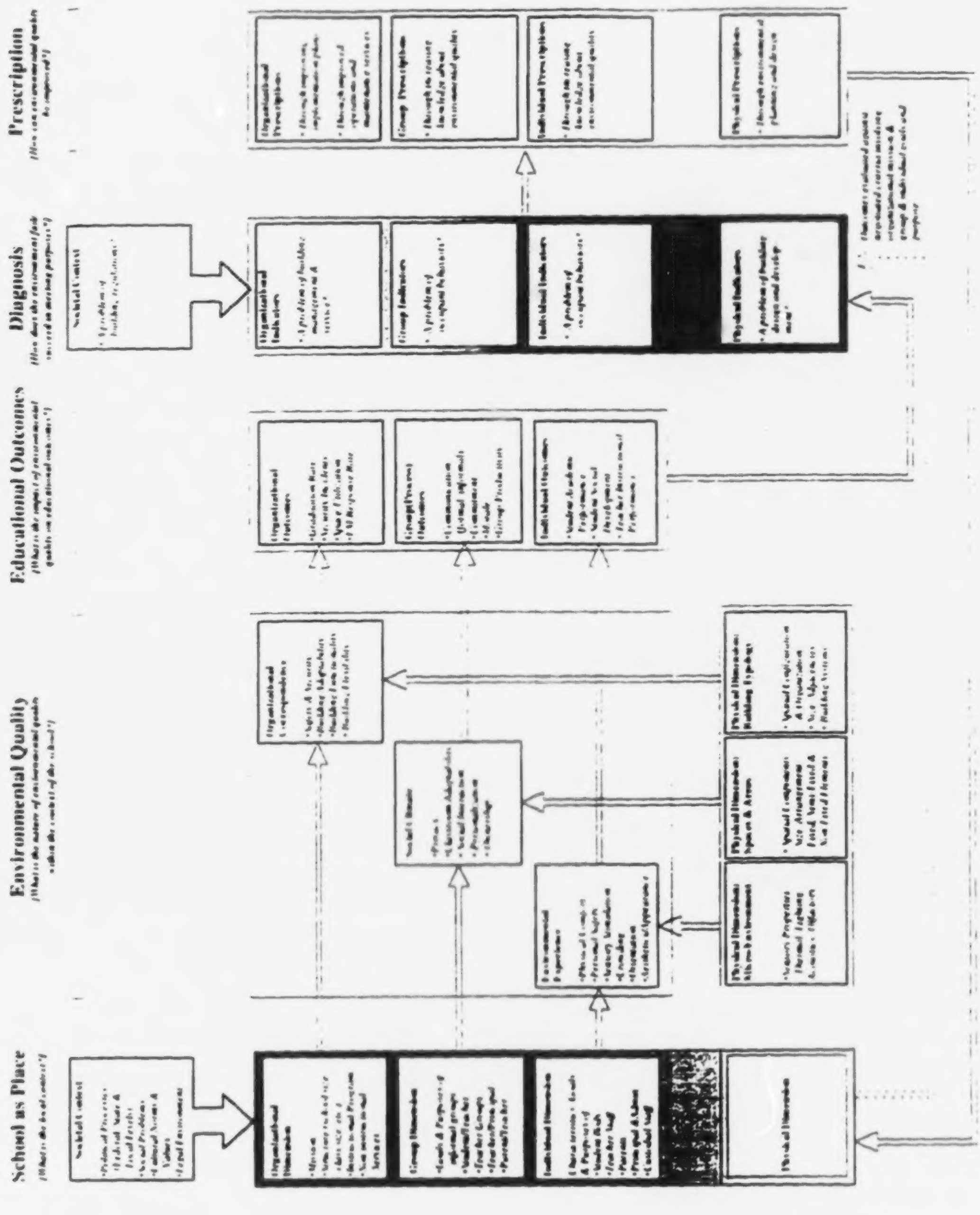
Attributes of environmental quality identified in the environment-behavior literature have emphasized psychological and social levels to the exclusion of organizational attributes. Many of the attributes identified within these dimensions of analysis have been adopted from other areas of environment-behavior literature such as work environments (Becker, 1990; Steele, 1986; Sundstrom, 1987).

Individual Level of Analysis: Environmental Experience

Environmental quality, as defined by environment-behavior researchers refers to "the less easily definable, and more variable, qualities of the built environment that provide satisfaction to people, its sensory quality in all modalities; the positive and negative effects on human feelings, behavior, performance and meaning" (Rapoport, 1977; 61). Environmental quality cannot be defined *ab inito* but must be discovered: hypotheses about it can be made on the basis of previous experience and insight to be gained through the study of the values, attitudes, and definitions of different groups in the context of a time and culture (Rapoport, 1970; 1). Environmental quality research "should be grounded on intimate knowledge of the ways people think and feel about environment..." (Rapoport, 1970; 1).

The term 'environmental quality' has come to represent many aspects of the environment: the symbolic (Rapoport, 1970, 1977), the perceptual (Craik & Zube, 1976; Rapoport, 1970; Zube, 1980), the climate, "personality" or "feeling" of a place (Anderson, 1982; Halpin & Croft, 1963), and the experiential or the environment-as-experienced

Figure 2.1
A Process Model of Environmental Quality Diagnosis, Design and Management


School as Place
Environmental Quality
Educational Outcomes
Diagnosis
Prescription

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(Ahrentzen, in press; Weisman, 1982). Environmental qualities have been described as environment-behavior principles (Pynoos & Regnier, 1991), attributes that are the result of interactions between organizational, social and individual subsystems (Weisman, 1982), "more enduring qualities of interdependence between people and places" (Stokols, 1986), and the timeless "quality that has no name" (Alexander, Ishikawa, and Silverstein, 1979). Note that all the definitions above suggest that environmental qualities represent or describe the resultant transactions between, or confluence of, people and their physical, social and organizational environments. The following further define attributes of environmental experience:

Physical comfort & health. Physical comfort broadly defined refers to a preferred configuration of thermal, visual, acoustic and olfactory factors. Thermal comfort is the result of the interaction of an individual's body temperature, metabolic cost of physical activity, acclimatization and ambient temperature, humidity, air circulation and flow. Visual comfort is a function of illumination levels that effect visual features of the task itself, size and contrast of objects (Boyce, 1981 in Bell et al 1990). Acoustic comfort is a function of the level of annoyance to unwanted sounds (noise). Three dimensions of annoyance are volume, predictability and perceived control (Glass & Singer, 1972).

Sensory stimulation and challenge. Sensory stimulation (spatial variety and complexity, colors, smells, sounds, surface textures, etc.) has been found to keep a person active, alert and aware, while the lack of sensory stimulation can be boring and monotonous, leading to inactivity and depression (Pynoos & Regnier, 1991). There is evidence that the same is true in child care environments with respect to resource-rich activity pockets (Moore, 1986).

Crowding and spaciousness. Crowding, which is in dialectic with spaciousness, is a psychological state characterized by stress and having motivational properties. Crowding is a perception that a space shared with others contributes to a loss of control, stimulus overload, lack of behavioral freedom or privacy. Crowding is distinguished from social density, and is a function of individual differences, situational conditions and social conditions (Bell et al, 1990; 303).

Wayfinding & Orientation. Wayfinding is defined as the process by which people orient and navigate in their environments (Garling, Book & Lindberg, 1986 in Bell et al, 1990). Wayfinding is viewed as a sequence of problem solving tasks that require a certain amount of stored environmental information (Passini, 1984 in Bell et al, 1990), and is related to the legibility of the environment.

Aesthetics and appearance. Aesthetics refers to what has been called symbolic aesthetics (Santayana, 1896 in Lang, 1987), in contrast to sensory and formal aesthetics. Symbolic aesthetics is concerned with the associated meanings of the patterns of the environment that give people pleasurable, emotional or affective reactions to places (Rapoport, 1977, 198; Russell & Lanius, 1984 in Bell et al, 1990). The overall appearance of the environment sends messages to others concerning the level of care and attention that is paid to the environment, and presents an image as to how occupants see themselves.

Group Level of Analysis: Social Climate

The purpose of the social aspects of environmental responsiveness are more process-oriented than outcome-oriented (Sundstrom, 1987). School climate research, for instance, represents a large body of research in the education literature dealing with organizational variables (Anderson, 1982), however, the research emphasizes psychological and social variables with only a passing acknowledgment of the physical environment (as a component of the ecological dimension of climate).

Variables that make up the climate of a school have been the subject of much debate (Anderson, 1982). Tagiuri & Litwin (1968 in Sundstrom, 1987) define climate as a collective perception within an organization of the quality of life. Halpin and Croft (1963; 1 in Anderson, 1982; 369) suggest that: "Personality is to the individual what 'climate' is to the organization."

Campbell, Dunnette, Lawler & Weich (1975; 306 in Sundstrom, 1987; 767-768) offer a conceptual framework of the dimensions or attributes of organizational climate: (1) Individual autonomy, or freedom and responsibility in decision making; (2) Degree of structure imposed on the position, including the closeness of supervision and the specification of jobs; (3) Reward orientation, including general satisfaction and orientation toward profit, promotion, and achievement; (4) Consideration, warmth, and support, particularly in supervisory practices; and (5) Cooperative interpersonal relations among peers, including presence of conflict, tolerance of conflict, and cooperation among peers. The following definitions further define the remaining attributes that may contribute to social climate:

Privacy. Privacy is an interpersonal boundary process by which people regulate interactions with others. The process involves the variation in their personal space such that their desired and achieved levels of privacy are consistent (Altman, 1975; 10).

Classroom adaptability. Classroom adaptability refers to the degree to which occupants feel that the physical classroom space can be adapted to different and desired educational activities and functions. Specific issues related to Classroom adaptability might include the inability to accommodate different furniture arrangements, inadequate room for instructional needs, problems with book, supply, student and personal storage, not enough display space, or structural obstructions (Loughin & Suina, 1982).

Social interaction. Social interaction is part of a dialectic process where privacy is the opposing force of an openness-closedness with reference to the self or restricting interaction with others (Altman, 1975; 11).

Personalization and ownership. Personalization refers to the marking of places, or the accretion of objects within them, and thereby the staking of claim to them (Becker, 1978). The degree to which a place is personalized depends on the affordances of the materials of its structure, intensity of inhabitants to change the place, how large a stake they have in the place, and the social norms and administrative rules of the context (Rapoport, 1967). Personalization is a form of expressing identity to others (Cooper, 1974).

Meaning and symbolism. The environment is full of potential symbolic meanings for people. Consciously or unconsciously these meanings contribute to people's feelings about the environment and about themselves, and it is an important way whereby people attain a sense of belonging to a group or place (Cooper, 1974; Rapoport, 1982; Rykwert, 1982 in Lang, 1987). Meanings of the environment, furniture layouts, and style are a nonverbal mechanism that people use to communicate messages about themselves, their backgrounds, social status and world views (Brinart, 1975; Rapoport, 1982).

Organizational Level of Analysis: Organizational Correspondence

Research on the relationship between the physical environment of the school and the educational organization that occupies it is non-existent. Many attributes of environmental quality at the organizational level of analysis remain virtually unexplored. However, there exists a growing focus on the impact and role of the physical environment in influencing organizational climate in environment-behavior research conducted on work environments that has relevance here (Becker, 1990; Steele, 1986; Sundstrom, 1987). Specifically, organizational ecology (Becker, 1990; Steele, 1986) considers how the planning, design and management of the physical settings of offices affect and are affected by organizational effectiveness (i.e., work patterns, organizational practices and organizational culture). Work and school environments share many organizational characteristics that make it possible to adopt and interpret findings.

It is generally agreed that organizational effectiveness is more than productivity and that it is a multidimensional construct (Sundstrom, 1987). Although there is limited evidence, Sundstrom (1987) hypothesizes that the physical setting has the opportunity to influence the effectiveness of the organization at the individual, interpersonal and organizational levels of analysis. At the individual level, job satisfaction and performance indicate consistent association with low rates of absence and turnover (Davis, 1977 in Sundstrom, 1986). The physical environment exerts an influence on performance through several psychological processes such as arousal, distraction, overload and stress (Evans, in press; Sundstrom. 1987; 764).

At the interpersonal level, the role of interpersonal relations may make indirect contributions to organizational effectiveness, namely, environments that support social interaction and communication of occupants, personalization and privacy increase satisfaction and allow occupants to work more efficiently. More specifically, the physical environment con empiritributes to measures of effectiveness through (a) symbolic messages conveying both clear status markers (Konar & Sundstrom, 1986), (b) the formation and cohesion of small groups such as in the case of the physical arrangement of meetings (Spaulding, 1978 in Becker, 1981), and (c) support of the organization's structure via the communication of identifiable work-groups, teams and subunits within the organization (Sundstrom, 1986; 342).

At the organizational level of analysis, the environment reflects and supports the structure and/or climate of the organization (Duffy, 1974; Trist et. al., 1963) in that organizations generate internal forces toward congruence between properties of the organization and properties of the physical environment (Sundstrom, 1986). Sundstrom has subsequently proposed an alternative hypothesis: an organization strives for congruence between certain characteristics of its offices and factories and its structure, climate, and image. The relationship between organizational effectiveness and physical environment has not been adequately investigated given the premise, widely held in the theoretical and practical literature, that the work environment reflects and supports the structure and climate of the organization (Duffy, 1974, 1980 and Trist et al., 1963 in Sundstrom, 1987; Becker, 1981). In addition, Becker (1981; 158) asserts that "there is a lack of awareness of, and relatively little empirical data concerning environment-behavior relationships oriented toward the study of organizations."

While organizational effectiveness is the ultimate question and central concept in any form of organizational analysis, its meaning and measurement is ambiguous (Hoy & Miskel, 1991). In organizational theory, both goal and system resource models of organizational effectiveness have been developed (Steers, 1977). Applying Hoy and Miskel's summary definitions (1991; 379), in the goal model, effectiveness is defined in terms of the relative attainment of feasible objectives having to do with physical facilities and equipment, the human energy of employees, and some commodity that can be exchanged for other resources. The systems resource model places great value on the harmonious operations of the organization's components, the ability to adapt, and the optimization of the leadership, decision-making, and communication process. In this study, a definition of organizational effectiveness which integrates both approaches will be adopted (Campbell, 1977; 13-55).

Measures of organizational effectiveness have failed to acknowledge the contribution and role of the physical environment (Becker, 1981). New measures must be found and systematic assessments carried out to demonstrate conclusively the effect of changes, including changes involving the physical environment and its use, on a complex system (Becker, 1981; 88). To further complicate the problem of measuring effectiveness, there are several issues related to how criteria are selected: criteria are likely to (a) be different for different organizations, (b) vary as a function of the time perspective employed (i.e. short- versus long-term outputs), and (c) be interpreted and assessed differently by different professional staff (i.e. economists versus human relations experts).

The following are examples of attributes of environmental quality at the organizational dimension:

Building Functionality. Building functionality refers to the degree to which various places within the school building are functionally compatible with the school's educational programs and activities. Specific issues related to building functionality might include problems with conducting cooperative learning in open instructional space, adequacy of space size and configuration of classrooms, assembly spaces or other spaces within the school.

Building Adaptability. Building adaptability refers to the degree to which physical spaces within the school can be adapted to different and desired educational activities and functions. Specific issues related to building adaptability might include the inability to accommodate different sized groups in auditoriums, cafeterias or libraries, various sized and arranged rooms for instructional and other needs, schoolwide storage problems (books and material supplies), not enough display space in corridors, or various structural impediments that limit alternatives for space utilization.

Safety & Security. Safety and security refers to the degree to which occupants feel the school building contributes to protecting occupants from harm, injury, or undue risk. Specific issues related to safety might include slippery floors, unsafe playground equipment, emergency lighting, child safety in parking lots, while issues related to security might include poor outdoor lighting, unlawful entry of intruders, drugs, weapons, stolen items, or surveillance.

Outcomes

Measures of environmental experience, social climate and organizational correspondence is a first step towards assessing environmental quality. The individual level outcomes include behavioral, affective and cognitive variables. Student academic performance, student social development, teacher instructional performance, student and teacher satisfaction, student attendance, truancy, delinquency and teacher turn-over are examples of individual outcomes. The group level of outcomes include a number of process outcomes such as formal and informal communication between students and teachers, among teachers, and between teachers and principals, and commitment, morale and productivity of students and teachers. At the organizational level, outcomes include yearly graduation rates, space utilization, facility management responsiveness,and security incidents.

There are a multitude of outcomes that can be considered when determining the overall quality of a school. The conventional approach has been to compare student academic performance across schools without consideration for other equally valid student social development outcomes. Perceptions of safety and security are quickly becoming a critical outcome of importance in public and private schools, and is a factor in determining quality on college campuses for women (Day, 1994). Fear of violence in urban and suburban schools alike has greatly contributed to the perception that schools are lacking in quality of life (see Kretovics & Nussel, 1994). In addition, with new demands for accountability in schools, public-private ventures are becoming more popular, with the result being a focus on administrative costs as an important outcome variable. Again, the outcomes that are used to determine quality will depend on a complex negotiation between different stakeholders in the school.

Environmental Assessment

Once outcomes are measured, they can be assessed against a negotiated set of individual, group and organizational criteria that results in a set of indicators of environmental quality for a particular school setting. This model follows what is referred to in educational evaluation research as 'formative' evaluation (Lewy, 1990; Patton, 1990; Rossi & Freeman, 1993; Rutman, 1977; Scriven, 1967; Stake, 1977; Worthen & Sanders, 1987).

Evaluation research most generally distinguishes between formative and summative evaluations (Patton, 1990; 150-159; Rossi & Freeman, 1993; 135-137; Scriven, 1967). *Formative evaluation* is conducted within the context of a specific program operation in order to provide information useful for improving that program. *Summative evaluation*, one the other hand, is conducted at the end of a program's life so as to provide potential consumers, funding sources and supervisors with judgments about the program's worth or merit (Scriven, 1967). Within the context of education, formative evaluation serves to improve an ongoing program activity, person, place or product, while summative evaluation is often used to make decisions concerning accountability, certification, or program selection (Scriven, 1967), program continuation, termination, or expansion (Worthen & Sanders, 1987; 34-35).

The development of the formative evaluation research approach arose out of concerns that evaluation studies rarely indicated conclusive results. These researchers were also convinced that evaluators can and should contribute to the improvement of educational programs throughout the course of the program's development (Lewy, 1990). Formative evaluation research process provides an opportunity for the researcher to assist in conceptualizing and operationalizing of program goals, effects, and assumed causal relationships (Rutman, 1977). The extent to which the researcher seeks generalization is often based on a difference in purpose. Summative evaluation seeks generalizations that concern the effectiveness of specific interventions, populations, and conditions, while formative evaluation does not seek to generalize beyond a specific intervention (Patton, 1990; 156). In addition to the limitation of generalization, formative research designs tend to deviate from that of classical experimental research designs of comparison studies (Lewy, 1990) in favor of case study methods (Stake, 1977). Formative evaluation methods often use a great variety of data gathering instruments both locally developed and standardized, and rely on observation and locally chosen informal data collection devices (Alkin, 1974).

Outcomes, along with a negotiated set of individual, group and organizational criteria, form the basis for the evaluation process that results in a set of indicators of environmental quality for a particular school setting. Within the individual dimension, these indicators might include performance, satisfaction, motivation, and health. Group dimension indicators might include social climate or group productivity. Within the organizational dimension, indicators of quality might include effectiveness of educational instruction and /or building performance. In addition, individual and group level indicators of quality can be viewed as comprising components of overall organizational effectiveness.

The mission of the school organization is typically oriented to improve organizational effectiveness. Organizational effectiveness can be seen as being comprised of four components: achievement or performance, satisfaction and commitment among members, productivity (or effective communication and coordination among individuals and work units), and a mutual supportive relationship to external surroundings (Sundstrom, 1987; 764). Within educational research, definitions of organizational effectiveness mirror that of organizational behavior: commitment, performance and productivity (Reyes, 1990).

Diagnosis & Prescription

Finally, these indicators provide the data for the final steps in the environmental quality assessment process: diagnosis and prescription. At this stage, the school might ask itself, how and why does the environment fail or succeed in meeting intended performance criteria, and how can the environmental development and management process be improved to meet or exceed the criteria. The results of this stage form the basis of action to change the environment of the school as is appropriate to meeting the performance criteria. The assessment process then repeats itself in a manner intended to maintain and improve the quality of the setting.

CHAPTER 3

ACTION RESEARCH

While the previous chapter addressed the theoretical shortcomings and methodological limitations associated with the problem of environment-behavior research on quality in school environments, this chapter addresses the epistemological biases within which these two problems are embedded. The problem of solving local problems while at the same time legitimately contributing to a body of social science knowledge concerning school environments will also be discussed.

This chapter first frames the problem of epistemological bias specifically within post-occupancy evaluation literature, and then, more broadly within the context of knowledge creation and use in the field of environment-behavior studies. A definition of action research that confronts this bias follows, after which, the nature of organizational problems are discussed from the perspective of both positivist science and action research responses. Schools as a special case of organizational problems is then discussed with respect to the action research tradition in education. Finally, the scientific legitimacy of action research is outlined, and the action research process is described.

Post-Occupancy Evaluation

The field of environment-behavior research has developed methods for conducting environmental evaluation that at first glance may have some applicability to the process model developed in Chapter 2. Post-occupancy evaluation (POE) is defined as "the process of evaluating buildings in a systematic and rigorous manner after they have been built and occupied for some time" (Preiser, 1988). Traditionally, POE provides "an appraisal of the degree to which a designed setting satisfies and supports explicit and implicit human needs and values of those for whom a building is designed" (Friedmann et al, 1978; 20).

There are calls for a revision in thinking about what these building evaluation methodologies are actually offering in the way of improving organizational decision-making (Zimring, 1988). POEs, as well as architectural programming methods, have essentially extended the conventional design decision-making process of the building industry without affecting the process itself. That is, these methodologies do not challenge the process by which design decisions are made, they only provide information for design decision-making thus minimizing the impact on the design they hope to improve. Mechanisms for insuring that programmatic and evaluative information are used effectively in the process of design and facility management decision-making are typically not in place thereby devaluing the real impact of research. Early in the development of building evaluation, Brill (1974) had warned that evaluation of solutions without reference to the design process which generated them was a "dead end." He argued that subjective evaluations of many researchers would be of little value because they were "essentially unhinged from the design process" (p.317). As Brill states:

> Understanding people's responses to spatial qualities and configurations without regard to or knowing the goals of the system and the activities to be carried out does not increase our capacity to design...None of it is really replicable experience, and little of it is wholly understandable in terms of the design process (Brill; 1974, 317).

In addition, there is no convincing method for evaluating POE's impact on building design other than through anecdotal evidence (Shibley, 1985). The reality of the complexity of the building process must be taken into account if researchers hope to influence the quality of the built environment in any substantial manner. For example, design decisions made during the process of building design may, or may not, reflect the goals and objectives of the evaluative research which preceded it. As Zimring (1988) states:

> In any complex building process, there are values, premises, decision processes, issues and so on that change over the course of the process: the fixed notions of POE that we have adopted tend to reify values and objectives. We

> need a different approach to environment-behavior research that eschews the artificial compartments that we have assigned to POE, programming, and other activities. Rather than primarily focusing on post hoc analyses of buildings as input into future decisions, POE can be incorporated into a comprehensive program of managing information and learning that includes standards-writing, feasibility studies, programming, design review, and maintenance scheduling. To be useful, this program must allow for changing goals as well as the multiple perspectives of different actors in the building process. (p. 280)

Zimring suggests a more comprehensive, on-going, in-process evaluation procedure; an evaluative process which is within the design process itself and not outside of the process. He further suggests that:

> a new body of theory is required if environmental design researchers are to be useful in supporting decisions about how buildings are planned, designed, renovated, regulated, managed, regulated and maintained. This theory recognizes both a different theory of how organizations make decisions and a new theory of action for evaluators who must see themselves as participants and decision-makers (Zimring; 1988, 280).

It could be argued that Zimring is advocating an action research model where the researcher is part of the system he is observing. If this assumption is true, many POE practitioners have begun to question the epistemological and methodological foundations of the environmental design evaluation from the perspective of the two community model of research utilization. In contrast, the one-community model of research utilization (Min, 1988) argues that in order to create knowledge, integration of research and practice is inevitable. According to this perspective, acting and knowing happen simultaneously in an integrated process which leads to knowledge which in turn, guides the direction of action (Schneekloth, 1987; Susman and Evered, 1978) and by definition advocates participation between researchers and practitioners in a process of change (Wisner, Stea & Kruks, 1991). Embracing the one-community model would require researchers to understand more keenly the impact activities of design have on knowledge generation and what type of knowledge is useful for design.

A new paradigmatic model, "Design-Decision Research," which goes one step further in integrating design and research has been proposed by Farbstein and Kantrowitz (1991):

> Design-decision research is, by definition, research which is consciously directed toward contributing to design decisions. It focuses explicitly on helping clients realize their objectives. Rather than approaching an issue by analyzing all its components, design-decision research asks: What are the critical issues here? What decisions will be made based on information to be developed? The activities of the researcher depend directly on the answer to these questions, rather than on a predetermined agenda or approach (such as the researcher's interest in a theoretical issue of methodological approach)...The researcher's role is to help the organization make *its* own best decisions, within the context of its objectives. (Farbstein & Kantrowitz, 1991, 302)

The potential role of design-decision research extends throughout the building life-cycle, contributing to effective building design as well as long-term facility management. Research no longer precedes or follows design, but are one in the same process and occur side-by-side on demand (Zimring et al., 1988).

The role of building performance evaluation in understanding design activity and its impact on the building product has received little attention from the research community (Friedmann, Zimring & Zube; 1978). Many evaluative factors could be identified for study: (a) the roles of participants and the decisions made by designers, clients, financiers, users and public officials; (b) values, preferences and assumptions of the participants, both about user behavior and about different aspects of the physical setting; (c) constraints that helped form the setting such as project scope, budget, schedules, and codes, regulations and ordinances; and (e) on-going building modifications by users, facility managers and designers (Friedmann, Zimring & Zube; 1978).

Shibley (1985) states that building evaluation has a central role to play in institutions. He has concluded that when POE's are incorporated, or institutionalized by organizations, processes of inquiry shift their focus from objective measurement (discovery of facts) to value-based learning and action (organizing and using facts). In this scenario, the responsibility for research design, collection of data, and analysis of results lies in the hands of the organization itself. Results are not handed out for implementation, but rather, they are part of the normal operation of the organization.

Knowledge Creation & Use in the Field of Environment-Behavior Research

Research utilization is a key topic of concern in environment-behavior research and attempts to address the problems of applying social science knowledge to solve local problems in real contexts. Two conceptions of research utilization have been described within the field of environment-behavior, one-community and two-community perspectives (Min. 1988). These parallel the larger social science debate of legitimate forms of scientific inquiry with respect to knowledge creation and use. The primary difference between one- and two-community activities in Environment-Behavior Studies concerns presumptions about the relationship between research and practice (Schneekloth, 1987). Two-community models assume the separation of the activities of research and practice, while one-community models begin with the assumption that research and practice are linked as one activity. Two community methods include databases, design guides, POEs, programming and other information transfer strategies (Schneekloth, 1987), while one-community methods emphasize various participatory design and planning techniques, and action research methods in generating knowledge directly in the local context. Table 3.1 summarizes the ontological, epistemological and methodological differences, major proponents, relationship of knowledge creation and use, researcher's involvement in decision-making and the role of users and clients in the research process.

One issue arising from the one-community model is that the problems of knowledge creation and use — often described as the 'gap' between research and practice — exist due to an over-reliance on the two-community model of research utilization that creates the gap by institutionally separating research and design activities.

To solve problems of environmental quality in local settings, a negotiation of values is central to answering two questions: what is quality and for whom is it intended. Researchers subscribing to the two-community model claim neutrality on these issues. In fact, however, two-community researchers do hold implicit values with respect to these two questions: quality is defined as the values researchers bring to the issue of quality (e.g., quality is experiential), and quality is defined in terms of user groups that they advocate for (e.g., children, elderly, physically impaired, etc.). These positions do not address the reality that quality is often not defined in these terms by local constituencies and therefore research findings are not in a form that is useful to decision-makers in these settings.

Action research, on the other hand, presumes that the negotiation of values in local contexts is not only important in determining how quality is defined, but is a central component of legitimate research of organizational problems, which are by their very nature, value-latent.

Definition of Action Research

The term "action research" was introduced by Kurt Lewin in 1946 to describe a novel approach toward social research that combined the generation of theory with the act of affecting social system change upon or in the social system being studied. Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework. (Rapoport, 1970; 499). Lewin characterized action research as "a comparative research on the conditions and effects of various forms of social action and research leading to social action (1946: 202-203). The process of action research is

Table 3.1
Philosophical Perspectives of Research/Practice Relationship in Environment-Behavior Studies (Based on Min, 1988)

Issue	Philosophical Perspectives	
	One-Community	Two-Community
Ontology	The world consists of wholes that can only be understood in context. Realities are socially constructed.	World consists of interacting entities that can be isolated and examined out of context.
Epistemology	Naturalistic Inquiry Praxis, Hermeneutics, Critical Theory, Inductive Inquiry	Logical-Positivism Deductive Inquiry
	Value-latency; Teleological	Value-free
	Research and practice are integrated activities.	Research and practice are independent activities, have different orientations, working styles, pursue different goals and values and use different language. Institutional separation.
	Information is generated in an integrated process of fact-finding, action and evaluation.	Information is transferred from one domain to the other.
	Knowledge is created through observing planned changes in reality.	Knowledge is created then utilized or applied in a specific context.
	Knowledge is gained by understanding the value and structure of the problem setting.	Knowledge created with no intention of use; free from teleological concerns or setting-specific constraints.
Methodology	Strategies include: Action Research Reflective Practice User Participation Collaborative Inquiry	Strategies include: Information Retrieval Systems Design Guides POE transfer strategy Programming
	Research utilization is performed through a cycle of research and action.	Research utilization is performed by transferring information from the domain of research to the domain of practice.
Major Proponents	Sommer, 1977, 1983, 1984 Schneekloth, 1987 Rivlin & Wolfe, 1985 Wisner, Stea & Kruks, 1991 Weisman, 1983	Kantrowitz, 1985 Moore, et. al. 1979 Seidel, 1985 Marcus, 1985 Zeisel, 1981
Researcher's Involvement in Decision-Making	Required to understand the social reality and be involved in the change process directly.	No immediate connection or concern with decisionmaking.
Role of users and clients	People are autonomous, self-reflective actors who own the research and action process.	People are objects of inquiry, data providers, pas sive recipients of infor - mation.

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conceived as "a spiral of steps, each of which is composed of a circle of planning, action. and fact-finding about the result of the action" (1946: 206). Workshops conducted jointly by the practitioners and scientists would have three interrelated functions of action, research, and training "as a triangle that should be kept together for the sake of any of the corners" (1946: 211).

Action research has a long tradition in social psychology (Lewin, 1946; Trist et.al., 1963) and organizational development (Susman & Evered, 1978; Whyte, 1989, 1991a, 1991b; Cunningham, 1993), while appearing later in education (Carr & Kemmis, 1986; Winter, 1989; Oja & Smulyan, 1989), and most recently, environmental design and environment-behavior research (Schneekloth, 1987; Sommer, 1977; Weisman, 1983; Wolfe & Rivlin, 1987). Cunningham (1993) identifies three major sources responsible for the development of action research: the Group Dynamics of Kurt Lewin at the Center for Group Dynamics at MIT; The Tavistock Institute of Human Relations in London; and the Institute for Operational Research in London. Whyte (1991a) suggests three streams of intellectual development and action that gave rise to action research as an alternative to social research, namely, social research methodology; participation in decision-making by low-ranking people in organizations and communities; and socio-technical systems thinking as pertains to organizational behavior.

Types of Action Research

Action research has come to represent a number of different types of research that can be organized on a continuum from non-participatory to participatory to emancipatory.

Non-participatory action research

Chien, Cook and Harding (1948) were one of the first to outline what they saw as four varieties of action research, two which could be categorized as non-participatory in nature: Empirical action research is a form of research who's goal is developing principles that validly represent the experience of day-to-day work of practitioners. This research is accomplished by the documentation of accumulated experience of the action researcher with a succession of similar groups of practitioners. Experimental action research calls for a controlled study of relative effectiveness of various techniques in identical situations with the goal being to encourage the development of scientific knowledge.

Argyris and Schon (1991) distinguish three forms of action research: action research, participatory action research and action science, with the first of these being non-participatory in nature. Action research,

> takes its cues . . . from the perceptions of practitioners within particular...contexts. Research is bounded by the boundaries of the local context. It builds descriptions and theories within the practice context itself, and tests them in the context through intervention experiments that have the burden of testing hypotheses and effecting some desirable change in the situation...their generalizations are not covering laws of normal science, but tend to describe thematic patterns derived from inquiry in one setting with the valid transferability depends on confirmation in yet another context by further experiment" (1991; 86).

Participatory action research

Chien, Cook and Harding (1948) offer two forms of participatory action research. Diagnostic action research is designed to lead to action with the goal being to diagnose a problem or need for change, and seek cures that are feasible, effective and acceptable to the people involved. Participant action research assumes participants will help in effecting the cure, and thereby be more keenly interested. This type of action research seeks to gather and present data in such a way that the participants can analyze the data themselves, and develop recommendations in response to the results.

Argyris and Schon's (1991; 86) two remaining types fall into the category of participatory action research as well. Participatory action research, is a form of action research that involves practitioners as both subjects and co-researchers. It is based on the Lewinian proposition that causal inferences about the behavior of human beings are more likely to be valid and enactable when they participate in building and testing the inferences, thereby developing a process that gives participants valid information, to ability to make informed choices and to generate internal commitment to the results of the inquiry. Action science is a form of action research that shares values and strategies with participatory action research, but places a central emphasis on the tacit theories-in-use that participants bring to practice and research. Some of these theories-in-use include strategies of unilateral control, unilateral self-protection, defensiveness, smoothing over, and covering up of which participants tend to be largely unaware. These strategies tend to undermine attempts to implement interventions derived from discoveries of action research and often distort the discoveries themselves in ways that even the researchers and practitioners tend to remain unaware, not because of ignorance but because of skillful adherence to theories-in-use.

Emanicipatory Action Research

The final type of action research can be conceptualized as "emancipatory" in that the local community sets the research agenda, carries out research, determines where the findings are to be used and takes action. Participatory research in planning represents this form of action research (Gaventa, 1988; Hall, 1993). "Participatory research attempts to break down the distinction between the researcher and the researched, the subjects and objects of knowledge production by the participation of the people-for-themselves in the process of gaining and creating knowledge" (Gaventa, 1988; 19). The long term goal of participatory research is to empower people not only psychologically, but politically to affect social change (Ramasubramian, 1994). An example of what might be called emancipatory action research is Pablo Freire's (1973) work in conscientization which emphasizes the study *by* people of their concrete living situation as a step in *investigacion-accion* (action research) via grassroots rural groups in Latin America to articulate more clearly to themselves their economic, social, and political options in the face of oppression (Brandao, 1984 in Wisner, Stea & Kruks, 1991).

Positivist Science and Action Research

As a means of gaining scientific legitimacy, the social sciences adopted the scientific methods of the natural sciences based on the philosophy of logical positivism. It was widely believed in the social science community that advances made in the fields of natural sciences, resulting from the scientific method based on positivism, could resolve a wide variety of social problems. Increasingly, however, in fields such as organizational science (Susman & Evered, 1978), education (Carr & Kemmis, 1986; Winter, 1987, 1989), law, medicine, and most recently environmental design practice (Schneekloth, 1987), the positivist approach to research has been found lacking in addressing and solving pressing social problems.

Action research in its various forms is argued to be in basic and consequential conflict with normal social science which is currently based on the philosophical presuppositions of logical positivism (Argyris & Schon, 1991; Cunningham, 1993; Susman & Evered, 1978; Whyte, 1989, 1991a, 1991b; Winter, 1987). The critique of logical positivism has its origins in the increased need by social scientists to generate knowledge of use for solving problems that members of organizations face.

The Nature of Organizational Problems

Many organizational problems can be described as "wicked" problems (Rittel, 1972) in that they are often ill-defined, value-latent, tacit, implicit, connotative, and goal-oriented (Susman & Evered, 1978). Methods of conventional science are not equipped for organizational problem solving. They are useful in definable, observable, denotative, explicit and technical problems, and have been better at creating physical achievements than in providing the knowledge to help societies and organizations adjust to those achievements (Cunningham, 1993: 45). Action research offers an alternative to conventional positivist science in that (1) it is oriented toward creating a desirable future for people for whom the research serves, and recognizes human organizations as purposeful systems their actions of which are guided by goals, objectives and ideals; (2) it recognizes the interdependence between the researcher and the client system and the dependence of the research process on the needs and competencies of both; and (3) it encourages the development of communication and problem-solving procedures and infrastructure required to maintain the process (Susman & Evered, 1978; 589).

Rigor-versus-relevance. Argyris & Schon (1991) describe the dilemma of rigor-versus-relevance encountered by the social scientist when confronted with organizational problems. If the social scientist favors the rigor of normal science that is currently dominant, his research risks becoming irrelevant to practitioners' demands for usable knowledge. If the social scientist favors the relevance of action research, his research may fail to meet prevailing disciplinary standards of rigor. The challenge for the action researcher is to define and meet standards of "appropriate rigor without sacrificing relevance" (1991; 86). In order to accomplish this purpose, the applied researcher must first find a way of representing research results that "enhances their usability," second, find a "complementary way of construing causality," and finally, develop "an appropriate methodology of causal inference" (Argyris & Schon, 1991; 85).

Value-latency. Organizational problems are inherently value-latent. Solving organizational problems often involves a form of evaluation of values in question. A value-neutral and ethically-free stance cannot be assumed in such situations, for it is often the case that the values of the client are implicitly supported at the expense of the values of the non-paying client. As Sommer (1973) has stated: "What is usually detached and seemingly free from social concerns is the investigator rather than the data!" (1973; 130). Sommer goes on to suggest that research grants are "bribes to induce scientists and scholars to refrain from social action" giving research an exploitative quality: the research is of no use to the subjects who are essentially being used (1973;130). This situation illustrates how knowledge and human interests are interwoven and are reflected in the choice of methods and the ends toward which such methods are used (Habermas, 1971). Some argue that the ends to be served by science should be similar to those ends desired by the organization such as improved understanding among persons and the release of human potential, not just better performance or greater productivity for the benefit of the managers' needs (Susman & Evered, 1978). Action research responds explicitly to the issue of values by recognizing, again, that organizations are guided by goals and objectives that themselves emerge from complex sets of human values.

Susman and Evered (1978) identify three reasons for the increasing criticism against positivist science: (1) conventional research methods have become increasingly irrelevant to real problems faced by organizations; (2) the failure of conventional science to recognize latent values behind the claim of neutrality about how knowledge is generated, and (3) conceptions of the goal of research as the accumulation of social facts that are then applied by practitioners, ultimately encouraging a separation of theory from practice. Susman and Evered (1978) go further to suggest that what appears to be a crisis of relevancy or usefulness of organizational science is actually a deeper "crisis of epistemology" related to the ways of understanding the organization and its problems (1978; 582).

Basic and Applied Research

While the distinction between basic and applied research established by conventional science tradition is shared among many action researchers, action researchers view the relationship between basic and applied research as problematic and advocate a more closely coupled basic/applied research process that, from the conventionalist's perspective, compromises rigor of scientific methods in favor of relevance to local problems.

Action research is often thought to be a form of applied research. Although there are similarities there are important differences as well. Cohen & Manion (1994; 187) explain that both use the scientific method, however, applied research is concerned mainly with testing theories, is quite rigorous; insists on the studying of a large number of cases; establishes as much control over variables as possible; demands precise sampling techniques: and exhibits a serious concern for generalizing its findings to specific settings. Action research, in contrast, focuses on a specific problem in a specific setting with the emphasis on generating precise knowledge for a particular situation and purpose; is not concerned with large numbers of cases and generalizing findings. A more critical differentiation between applied research and action research concerns differences in assumptions of the purposes and goals of science. Applied research is allied with positivist tradition which action research in its most radical form rejects.

While accepting the distinction between basic and applied research, Whyte (1991a) advocates a closer coupling of basic and applied research through what he calls an applied sociological research strategy of Participatory Action Research (PAR). He argues that PAR can have a far greater impact than the conventional professional expert role of the practitioner-consultant in stimulating and guiding organizational change. In addressing the problem of relevance and rigor, Whyte challenges the definition of rigor: in the conventional model subjects have little or no opportunity to check facts or to offer alternative explanations and in the researcher's final reports, will often find serious errors in facts and in interpretations. He argues that the conventional researcher will shrug off such criticism as being motivated by the subjects' defensiveness, apparently a characteristic not prevalent in the social scientists themselves! As Whyte argues, the cross-checking process assures a far higher standard of factual accuracy than could be achieved by conventional social science methods (1991a; 42).

Sommer (1983) draws a distinction between basic and applied research that is based on the relationship between the researcher and the implied user. The knowledge generated from the research suggest it is this relationship, not how the research is used that determines the difference between basic and applied research. Basic research seeks answers to long-range questions, motivated primarily by curiosity and the researcher's belief in the value of the information. No client benefits directly from the information, and the results will appear in academic periodicals. Applied research that seeks practical answers to immediate questions will, on the other hand, appear in periodicals directed to practitioners (Sommer, 1983). Sommer (1983; 429) adds that the presence or absence of a specific client who will benefit directly from the information and the motivation of the researcher(s)" are the two main distinguishing factors of the pure types of basic and applied studies — not how it is used — basic research may have practical benefits, while applied research may raise theoretical and methodological issues. Sommer (1983) concludes that:

> applied studies by themselves generally have a short-run impact on practice, that basic research affects primarily other researchers and theorists, and that a combination of basic and applied studies following an action research model can have a long-range impact on both theory and practice (p. 435).

Finally, Sommer (1983) states that the value of combining basic and applied studies is that the links to theory provide concepts and methods that go beyond a particular context, and the link to practice encourages opportunities for immediate implementation.

Action research addresses the problem of basic/applied research, and concomitantly the theory/practice dichotomy, by recognizing that (1) theory is grounded in action and that it provides a guide for determining what should be considered in the diagnosis, as well as generating possible courses of action for dealing with problems; (2) theories of action are products of previously taken action and are themselves subject to reexamination and reformulation upon entering a new research situation (Susman & Evered, 1978; 590).

The Scientific Legitimacy of Action Research

Action research has emerged as an alternative research approach to positivist science that addresses organizational problems. Here we ask the question, does action research have scientific legitimacy? That is, can action research, or action science, be considered a true 'Science'? From the point of view of positivist science, action research cannot pass the criterion tests of logical positivism (Susman & Evered, 1978) for the reason that action research does not hold similar assumptions about causality, generalization and objectivity (Winter, 1987). Instead of attempting to develop an action science that passes the criterion tests of logical positivism, action researchers have argued that action science is based on a different set of philosophical presuppositions than that of positivist science (Oquist, 1978; Susman & Evered, 1978). Figure 3.2 briefly summarizes the differences in philosophical presuppositions between positivist science and action science research.

Action Research in School Settings

Educational Research

Action research has developed an extended tradition in educational research (Carr & Kemmis, 1986; Corey, 1952; Kemmis, 1982; Elliot, 1985; Nixon, 1981; Oja & Smulyan, 1989; Patterson, Santa, Short & Smith, 1993; Winter, 1987, 1989). The field of educational research has been described as moving through four phases: the interpretative research phase which focused on the development of educational theory to make sense of educational practice; the technical phase that focused on developing scientific techniques to examine and improve practice; the pessimistic stage in which research and practice were separate intellectual activities; and the current self-reflective stage characterized by the conviction that the rights and skills of practitioners should be recognized and that they should be involved in the examination of practice and the clarification of theory (Kemmis, 1982). Stephen Corey (1952) is credited for being one of the first researchers to conduct action research in the field of education. The use of action research as a research approach in education arose from the need to bridge the perceived gap between the researcher and the user that had "resulted in little or no implementation of research findings at the classroom level" (Oja & Smulyan, 1989; 9).

Table 3.2
A Comparison between the Philosophical Presuppositions of Positivist Science and Action Science

Philosophical Presuppositions	Positivist Science	Action Science
Ontological	*Reductionism* the world consists of a single, tangible reality that can be taken apart into pieces and studied independently.	*Holism:* the world consists of multiple constructed realities.
Epistemological		
Relation of Observer to Observed	*Objectivity:* a separation of the observer from the observed is possible. Researcher is independent of action.	*Intersubjectivity:* the observer is part of the system being observed. Researcher is engaged in action.
Generalization	*Nomothetic:* there is temporal and contextual independence of observations, so that what is true at one time and place may, under appropriate circumstances (such as sampling) also be true at another time and place. Truth statements form a nomothetic body of knowledge.	*Idiographic:* observations are contextually and temporally-based such that all knowledge forms working hypotheses of the individual case that may be transferable to other contexts. These hypotheses form an idiographic body of knowledge.
Causality	*Linear causality* there are no effects without causes and no causes without effects	*Mutual causality:* all entities are in a state of mutual simultaneous shaping, making it impossible to distinguish cause from effect.
Explanation	*Covering laws:* events can be explained under covering laws.	*Principles of action* understanding: prediction and control are unlikely, but understanding principles of action are possible.
Prediction	The researcher is the sole possessor of knowledge from which actions are drawn and predictions made.	Co-production of knowledge is possible between researcher and self-reflective participants (client system) collaborating in the choice of actions to be made and the evaluation of those actions.
Methodological		
Strategy for generating knowledge	*Deductive and inductive* methods advance knowledge.	Falsification of *conjectures* advances knowledge.
Axiological assumption of value	*Value freedom* methodology guarantees that the results of an inquiry are essentially free from the influence of any value system or bias Research is independent of the value system it investigates.	*Value-latency:* the choice of methods always involves a decision about values. Research has moral and ethical implications with respect to the system being investigated.
Criteria for confirmation	Logical consistency, prediction and control.	Evaluating whether actions produce intended consequences.

Action research in education has taken on several different forms: the *teacher-as-researcher* movement that aims to involve teachers in reflective practice (Carr & Kemmis, 1986; Patterson, Santa, Short & Smith, 1993); *experimental social administration* that aims at affecting policy and practice rather than engaging teachers in reflection (Kelly, 1986), *simultaneous-integrated action research,* the goal of which is to contribute primarily to social theory (Hult & Lemming, 1980 in Kelly, 1986), and *collaborative action research* which focuses on staff development, improved school practices, and the modification and elaboration of theories of teaching and learning (Oja & Smulyan, 1989).

Action Research in Environment-Behavior Studies

Action research has been adopted as a legitimate research approach by a number of environment-behavior researchers (Schneekloth, 1987; Sommer, 1977; Sommer & Amich, 1984; Wisner, Stea & Kruks, 1991; Wolfe, 1986).

Some of the work of Maxine Wolfe and Leanne Rivlin (Wolfe & Rivlin, 1985, 1987; Wolfe, 1986) offers an example of action research in school settings from the perspective of an environment-behavior. Wolfe and Rivlin's work in schools is framed with the larger context of children in institutional environments including schools, psychiatric facilities, and day-care centers (Wolfe & Rivlin, 1987). In their work, they have

> attempted to understand the relationships between the stated goals of a particular place; the administrative, educational, and therapeutic programs developed to attain these goals; the physical, social, economic, and political environments in which these programs were implemented; and the eventual impact on the lives of the children housed within them...[and in doing so]...have tried to extract generalizations concerning the child-environment relationship (Wolfe & Rivlin, 1987; 89).

The focus of their research has been on the developmental and socializing implications of institutional places on children. Wolfe and Rivlin (1987) argue that institutions are in effect, agents of socialization in that they designate social/physical settings that perform particular tasks deemed necessary in society to insure the integration of people into the dominant culture.

In order to understand the role institutions play in the daily lives of children, they consider the historical context of the development of values, attitudes and physical forms these institutions have inherited and identify unstated goals shared by various institutional settings. Though much of Wolfe and Rivlin's work in children's institutions has focused on discovering the reality of daily life, they have attempted to play a more active role in changing the quality of children's experiences in these places. They have worked, for example, with teachers to help clarify the relationship between teachers' stated educational goals and teachers' behavior in the classroom, and ways in which the physical setting of the classroom impeded or aided what they had said they were attempting to accomplish (Wolfe & Rivlin, 1987; 108-109).

Wolfe and Rivlin report that there is a lack of discussion in the literature of the actual impact of environment-behavior research upon the real conditions of schooling. For instance, very little research has been conducted on the influence or efficacy of the research on changing organizational policy toward educational environments (Wolfe, 1986). Wolfe and Rivlin (1985, 1987) have reported a number of generalized findings that have emerged from their research. They have reported, for instance, that in every institution they have studied, they have observed a striking routinization of daily life and a lack of variety and change in both the physical qualities and activities, despite differences in the type of children, neighborhoods, or purpose of the facility. Daily life appears as "an unvarying series of events taking place in an endless repetition of similar spaces, built into an unvarying time schedule, all defined by some outside power" (p.102). Wolfe and Rivlin observe that the overriding goals of institutions take precedence over children as people. Within schools, education is the "prevailing theme of the day" (p. 102): the child is seen less as a developing person and more as a student; little time or space belongs to the child. Although children spend a portion of their days outside the school context, much of their time in the school is programmed and space is restricted. The only personal space they have are desks, cubbies and coat closets, yet children do not have free access even to these and there are restrictions on what can be kept in them. They have found, in addition, that children have very little privacy, are infrequently afforded opportunities to be alone, and attempts by children to achieve physical privacy are often devalued and seen as inappropriate and antisocial by teachers (p.109). In discussing changes in the educational environment with teachers and administrators, Wolfe (1986) comments:

> We found that in most of these settings what occurred on a daily basis *did not reflect the goals that teachers, administrators or designers said they were trying to achieve*. People talked about the value of individualized programs yet taught group classes and measured progress using standardized tests. Though the fixed desks and seats had been replaced by movable furniture, in most rooms and schools no matter what the educational philosophy or the overall design of the space, the arrangements set at the beginning of the school year remained until the last day of classes, including the flexible walls. This was true despite the repeated declarations of staff that their spaces and rooms "weren't working" or that they wanted them to reflect changing programs. *In all our work it has been impossible to ignore the differences between what people said they were doing and what we saw them doing* (p. 1).

Wolfe and Rivlin (1987) argue that the act of change can either be a potent mechanism for revealing what is hidden, or it can obscure underlying issues and support a continuation of the status quo. Recognizing this is important for those engaged in environmental change. Often, administrators can point out evaluation efforts or physical changes as signs that children's lives are being improved, whether or not it is true. In sum, Wolfe and Rivlin identify a set of underlying assumptions that they see as barriers to innovation: structure and routine, control and authority, privacy, publicness and surveillance, and conformity versus independence (Wolfe, 1986; Wolfe & Rivlin, 1987).

There are a number of other examples outside of school environments research of design researchers who follow a participatory planning process that can be reinterpreted as an action research mode of inquiry (Carpman, 1983; Regnier, 1984; Schneekloth & Shibley, 1981).

Carpman (1983) reviews the Patient & Visitor Participation Project in the University of Michigan Replacement Hospital. As plans for renovations were being drawn up, the PVP project attempted to influence a number of design decisions. The research team operated within a larger planning structure that involved a number of hospital political interests. Research was conducted on user preferences through interviews, survey questionnaires, site tours, use of scale models and photographs, and group discussion. Findings from the research were used to influence design decisions in all areas of the project with limited success.

Regnier (1984) describes the Beverly Hills Congregate Housing Project that addressed the need for a community-based service and support for maintaining an independent lifestyle for the elderly population. The project goal to produce a program and design was fulfilled partially through a research process that involved a number of representatives of the elderly community. The research study included a demographic survey and telephone interviews of over 125 community care facilities, with the results of the interviews being analyzed to examine best practices. Next, a survey questionnaire was mailed to a sample of the elderly population to analyze specific preferences of the community and analyzed. The planning and design process consisted of four worksessions (problem definition, solution seeking, preliminary building critique, and final critique) with representative elderly residents from the community as well as a number of experts. Focus group discussions were conducted which involved ranking of issues; models were used to generate additional informal commentary on aspects of the project. The products of the sessions were a preliminary design and a management-governance document. In order to develop new research, design hypotheses were developed from concepts that could be tested in a post-occupancy evaluation.

Schneekloth and Shibley (1981) review a project they conducted that provided a new community facility for the First Baptist Church of Roanoke, Virginia. The existing facility no longer met the needs of the congregation. The design and research consultants facilitated three events: establishing goals, gathering data and translation of data into design ideas and patterns. The products of these events were a program and schematic design criteria. The project began by clarifying and elaborating goals and objectives for the project with a small group workshop. Once the objectives were clear, a second larger group workshop was facilitated in which the congregation was more fully involved in further brainstorming and rank ordering of a number of issues to be considered. A walking tour was then conducted that allowed members to record their impressions of the surrounding neighborhood and to discuss them in small groups. Activity categories generated from the previous workshops and walking tour were later translated into 500 design ideas and patterns in a series of small group meetings. Finally, another series of small group design review meetings were held involving members of the coordinating committee.

These cases describe processes that have a dual purpose of solving a local programming/planning problem, while generating substantive and theoretical knowledge about aspects of environment-behavior relations. These projects used a variety of data gathering methods: literature reviews, discussion groups and small group workshops, design model games, individual interviewer administrated questionnaires, observations, and site tours. A common characteristic of these projects is that data was generated from a variety of sources and organized and re-presented to small groups for further discussion. The results and outcomes of these group processes in all cases was the refinement and prioritization of problems and issues, alternative solutions to those problems, and criteria for evaluating the success of the intervention in meeting the previously stated needs, purposes and goals.

Action Research Process

The action research process has been delineated by a number of authors in various disciplines (Cunningham, 1993; Ebbutt, 1985; Elden & Levin, 1991; Susman & Evered. 1978; Whyte, 1991a) .

Elden & Levin (1991; 130) provide a "cogenerative" model that conceptualizes the process of action research from the perspective of the relationship between the action researcher and the practitioner (Figure 3.3). The model describes the relationship between the "insiders" (local participants) and "outsiders" (professional researchers) collaborating in co-creating "local theory" that the participants test out by acting on it (Elden & Levin, 1991; 129-130). The results of the research are then fed back to improve the participants' 'theory' while generating general ("scientific") theory.

Lewin (1948) first explained that action research proceeds through spiraling cycles of planning, execution and reconnaissance (or fact-finding) in order to evaluate and modify the plan. Susman and Evered (1978) further elaborated Lewin's model suggesting that action research cycles through five phases: diagnosing, action planning, action taking, evaluating, and specifying learning, while the client infrastructure maintains and regulates some or all of these five phases concurrently (Figure 3.4).

A Procedural Model of the Action Research Process

Cunningham (1993; 67-90, 187-209) offers the most comprehensive description of the procedural steps in the action research process from the perspective of organizational

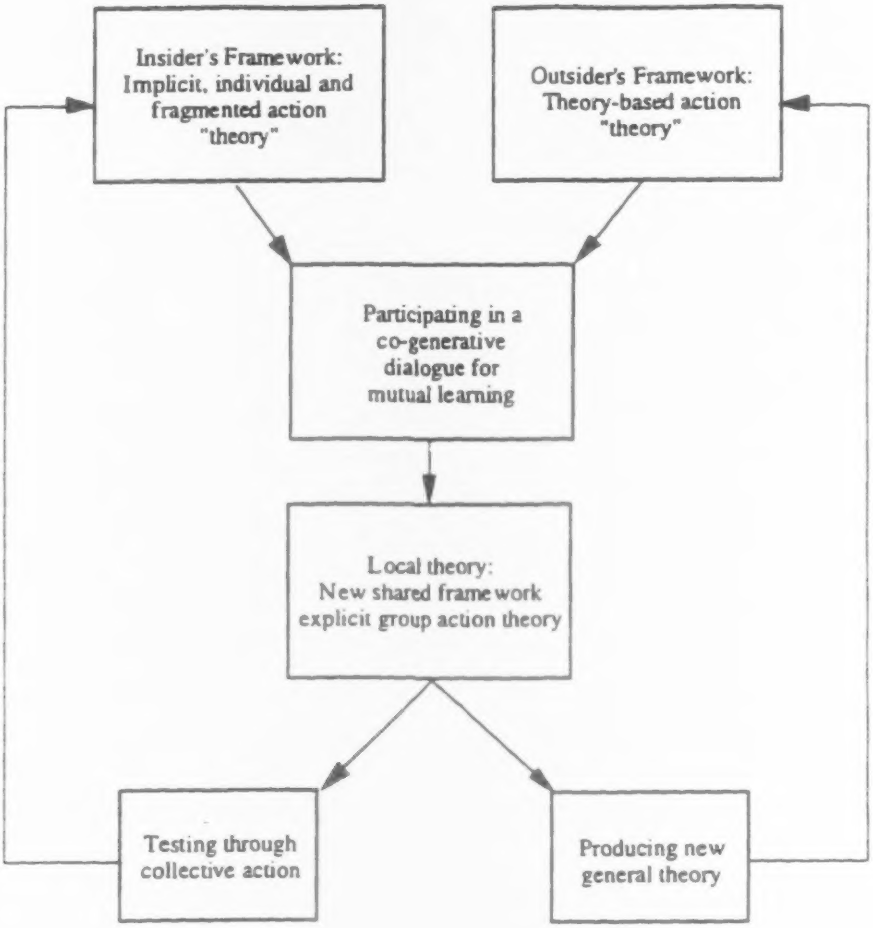
Insider's Framework: Implicit, individual and fragmented action "theory"
Outsider's Framework: Theory-based action "theory"
Participating in a co-generative dialogue for mutual learning
Local theory: New shared framework explicit group action theory
Testing through collective action
Producing new general theory

Figure 3.1
A Cogenerative Model of Participatory Action Research
(Based on Elden & Levin, 1991; 130)

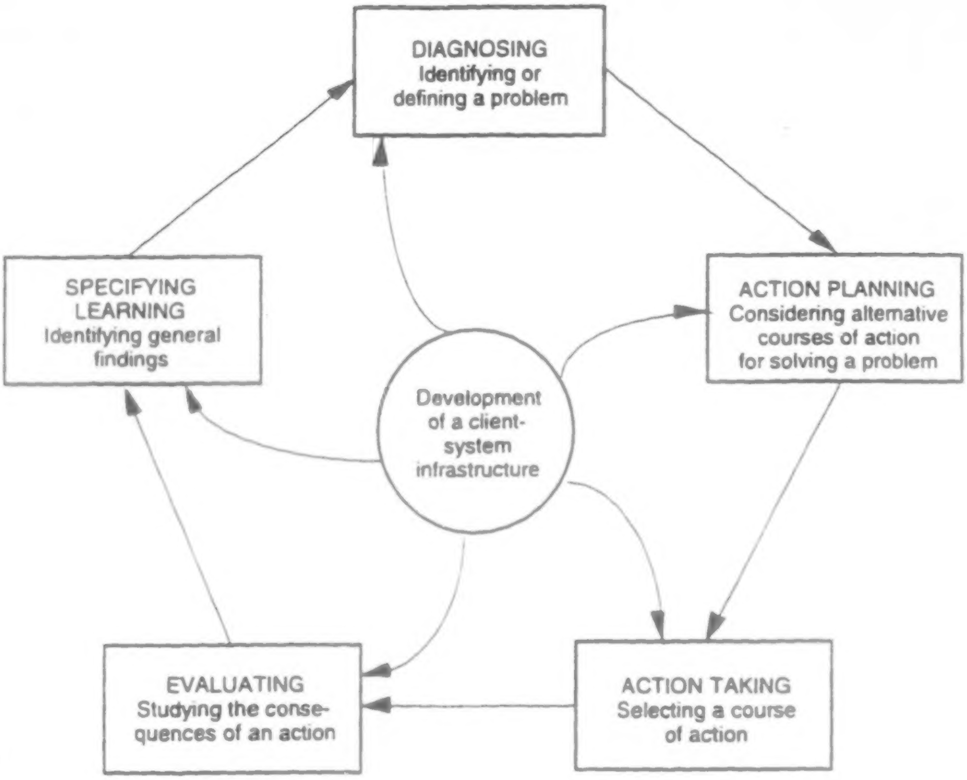
DIAGNOSING
Identifying or defining a problem
ACTION PLANNING
Considering alternative courses of action for solving a problem
ACTION TAKING
Selecting a course of action
EVALUATING
Studying the consequences of an action
SPECIFYING LEARNING
Identifying general findings
Development of a client-system infrastructure

Figure 3.2
The Cyclic Process of Action Research
(Model based on Susman & Evered, 1978; 588)

development. The process consists of four sequences each consisting of several distinct steps: (1) group development; (2) defining the need for change; (3) focusing and designing a program for change; and (4) implementing and developing an action plan. What follows is a detailed summary of Cunningham's procedural model.

Sequence 1: Group Development

The group development sequence consists of the following steps: (a) entry; (b) forming an action research group; (c) developing goals for the action research group; (d) training the action research group; (5) drawing up an agreement on the evaluation research that will be conducted.

> (1a) Entry: Typically a problem arises from individual members within the organization that is seen as critical to the functioning of the organization. In order for the action research process to be successful in solving the problem, there must be a commitment to solving the problem at all levels within the organization. Often, there are multiple points of entry that require negotiation and coaxing that in the process begin to build commitment to action, refine issues and criteria for success, and form common interests.
>
> (1b) Forming an action research group: Membership should consist of people who can take action, are willing to respond, and are committed to the problem's resolution. It is desirable to hold preliminary recruiting interviews in which the purposes and interests of would-be participants can be identified. The researcher needs to explain the methodology and principles of action research to participants at that time. In addition, the researcher must keep those in power and control informed as to the progress of the group. Cunningham provides no recommendations on size of group, but he does suggest forming several small groups as necessary to keep the process from becoming too unwieldy.
>
> (1c) Developing goals for the action research group: To function cooperatively as a group and help orient the research effort, the group must define common goals evolved from its need to solve a problem or plan an overall direction. Goals should be flexible, realistic and approachable, able to be re-articulated in the process, must be important to group and significant to organizational functioning, and capture and maintain interest and commitment of members.
>
> (1d) Training the action research group: Group building is necessary to develop cooperation and effectiveness. An atmosphere should be created that encour-

ages freedom to change and to be self-critical. However, complete candor needs to be tempered when freedom is first granted to the group until members feel more comfortable expressing themselves. The group should evaluate itself on how well it is doing (have we gone about this in the right way, what might be done, and what should be done in the future to make our work more expeditious). This self-evaluation can be done in a questionnaire or verbally. Getting these judgments from the group may be the most tangible and sensible way of introducing action research procedures in group work.

(1e) Drawing up an agreement on the research that will be conducted: An agreement with those who authorize the research contract needs to be secured to facilitate the necessary research conditions. A well-defined agreement should include a statement of goals, justifications, and expectations so that the organization knows exactly what it is authorizing and supporting.

Sequence 2: Defining the Need for Change

This sequence consists of the following steps: (a) identifying problems and needs; (b) using interviews to develop measures; (c) sorting information into categories; (d) collecting and reporting data.

(2a) Identifying problems and needs: This process consists of initial perceptions, attitudes, and diagnosis on the part of organizational members of problems significant to the functioning of the organization. Two types of knowledge should be used in this process: (1) propositional knowledge from a theoretical perspective of social science manifested in the researcher's experience and limited to variables and; (2) experiential knowledge from a managerial/ organizational perspective of participants' terminology and common sense interpretations. The goal of this stage is to define and summarize multiple perspectives.

(2b) Using interviews to develop measures: The purpose of the open-ended interview is to assist in defining organizational problems and clarifying research measures and criteria by defining: (1) positive and negative feelings about issues; (2) examples of issues, problems, incidents; (3) ideas for how to carry out research; (4) ideas, criteria or questions which might be used in a questionnaire. Data gathered should then be analyzed by content analysis into overall concepts and themes.

(2c) Sorting information into categories: This process consists of a sorting procedure, the purpose of which is to order and categorize interim statements of concern and issues describing the problem. This process builds a conceptual framework or a grounded theory of issues, problems and concerns to be researched. The questionnaire becomes a formal mechanism for operationalizing the framework.

(2d) Collecting and reporting data: The survey instrument is administered to a population of individuals who can provide information and perspective on an issue that represents the perspectives of their peers.

Sequence 3: Designing and Focusing a Program for Change

The third sequence consists of the following steps: (a) identifying opportunities and threats; (b) outlining the organization's strengths and weaknesses; (c) identifying values; (d) defining the mission; (e) developing the vision.

(3a) Identifying opportunities and threats: The external environment is scanned for economic trends, competitors, government policy, legislation, demographic changes, market influences, etc. and prioritized in terms of probabilities of occurrence, impact and ability of organization to control.

(3b) Outlining the organization's strengths and weaknesses: The organization is scanned for organizational resources presently committed, and commitments valuable to a desirable future for the organization.

(3c) Identifying values (organizational philosophy): This activity involves identifying the important assumptions, goals and ideals of the organization.

(3d) Defining the mission: A mission statement is prepared which formally justifies the organization's existence with respect to community and societal educational needs.

(3e) Developing the vision: This step involves developing a statement of the organization's desirable futures, directions and goals.

Sequence 4: Implementing and Developing an Action Plan

The fourth sequence consists of the following steps: (a) developing the strategic issue or alternative; (b) identifying the strategic direction for the issue; (c) developing an action plan; (d) developing an ongoing process of evaluating and updating; (e) developing a commitment plan.

(4a) Developing the Strategic Issue or Alternative: This step involves the collection of *alternative strategic issues* [i.e., "a pattern of purposes, policies, programs, actions, decisions or resource allocations that define what the organization is, what it does, and why it does it" (Bryson, 1988; 59 in Cunningham, 1993: 201).] from any number of sources: social sciences, examples of successful interventions used elsewhere, ideas in popular books and articles, content analysis of data collected from the organizational system using the terminology of organizational members, or personal theories of management developed from experience. Cunningham (1993; 198) identifies four functional areas which strategies can address: adaptive/reactive (strategies that address only immediate problems), coordinative (strategies that address the improvement of the administrative/management system), productive (strategies that address the improvement of outputs and services), and maintenance or problem-solving (strategies that raise questions concerning the strengths and weaknesses of the organization).

(4b) Identifying Strategic Direction for the Issue: This step involves identifying practical alternatives for resolving the issues, enumerating the implementation requirements and barriers to achieving these alternatives, outlining the major proposals, identifying actions and resources needed, and assessing the accomplishment of objectives.

(4c) Developing an Action Plan: This step involves the preparation of a written agreement or formal document which identifies a series of intended strategic actions developed in the previous step. The plan is a summary of the previous steps undertaken and a list of projects with tasks, target dates and people responsible.

(4d) Developing an ongoing process of evaluating, updating: Evaluation addresses the research framework, levels of commitment, problems addressed, effectiveness of actions, and whether the actions have contributed positively to change.

(4e) Developing a commitment plan: This process is the most important task in the entire action research process. An effective implementation plan is incremental, recognizes immediate needs, illustrates the grand design and steps, and allows individuals to articulate problems and/or projects in relation to their roles and responsibilities. Action research is a bottom-up process of developing goals and objectives based on participation and involvement. An analysis of who is committed to ideas, able and willing to provide resources, and willing to carry out new process. Action research's links to the processes of organizational development and strategic planning suggests that research and change is not simply an assessment activity.

Action Research Methods

Action research shares similar epistemological assumptions with research-as-praxis, phenomenology, ethnography, critical theory, naturalistic inquiry and emancipatory research — all forms of an emerging post-positivist research paradigm (Lather, 1986; Lincoln &

Guba, 1985; Susman & Evered, 1978). The methodological implications of post-positivism in general, and action research in particular, have had relatively little attention in the literature (Lather, 1986). The action research literature, for instance, has primarily focused on the challenge of legitimizing its status as an alternative science to the tradition of logical positivism. As a consequence of this lack of attention, what this different set of methods consists of is not entirely understood and the subject of much debate. Patton (1990; 157), for instance, argues that as a result of blurred distinction between research and action, research methods tend to be less systematic, more informal, and quite specific to the organizational problem being researched, while Winter (1989) argues that methods can be just as rigorous as methods used by positivist scientists when action research methods are based on an alternative set of criteria.

Naturalistic Inquiry

One methodology that shares many of the characteristic of the action research process, described in the previous chapter, has been conceptualized by Lincoln and Guba (1985) as 'naturalistic inquiry.' Although Lincoln and Guba do not explicitly imply there is a connection between these two research strategies, naturalistic inquiry involves conducting studies in the natural setting, building on the tacit knowledge of people in the setting using qualitative methods and engaging in an iterated process of purposive sampling, inductive data analysis, grounded theory and emergent design that involves negotiated outcomes, and leads to a case report that is both idiographically interpreted and tentatively applied (Lincoln & Guba, 1985; 188). This description of the process of naturalistic inquiry is very similar to the first stage of the action research process — diagnosing — as described by Susman and Evered (1978). Naturalistic inquiry stops at this first step of the action research process. 'Tentative application' referred to in this process refers to the application of idiographic findings to "other similar contexts" (Lincoln & Guba, 1985; 189), not necessarily to the same context as a means of solving a particular problem. The methods of naturalistic inquiry are useful in providing directions for conducting the first phase of the action research process.

Formative Evaluation Methods

The evaluation step in the action research process has also been introduced in Chapter 2 as following formative evaluation (as originally defined by Scriven, 1967; Stake, 1977; and others). Stake's (1980) responsive evaluation model offers a naturalistic, participatory-oriented evaluation process can be adopted in service of a formative evaluation method within the context of action research. Responsive evaluation, due to its broad definition, has also been interpreted to include all other evaluation models (Lincoln & Guba, 1981; Worthen & Sanders, 1987). Responsive evaluation's central focus is in addressing the concerns and issues of a 'stakeholder' audience; to be responsive to the realities in the program and to the reactions, concerns, and issues of participants rather than being preordinate with evaluation plans and objectives of the program (Worthen & Sanders, 1987; 134).

Stake (1975b in Worthen & Sanders, 1987; 135-136) described the recurring events in a responsive evaluation: (1) talk with clients, program staff, audiences; (2) identify program scope; (3) overview program activities; (4) discover purposes, concerns; (5) conceptualize issues, problems; (6) identify data needs with reference to issues; (7) select observers, judges, instruments if any; (8) observe designated antecedents, transactions and outcomes; (9) thematize: prepare portrayals, case studies; (10) validate, confirm, attempt to disconfirm; (11) winnow, format for audience use; (12) assemble formal reports, if any. Guba and Lincoln (1981) have integrated responsive evaluation into a model of naturalistic inquiry to improve the usefulness of evaluation results in that they are more sensitive to differing perspective of various stakeholders.

Case Study Method

Action research also shares many characteristics with the case study method (Stake, 1995). The case study typically involves the intense observation of a single unit — a classroom, a school — with the purpose of "probing deeply and to analyze intensively the multifarious phenomena that constitute the life cycle of the unit with a view to establishing generalizations about the wider population to which that unit belongs" (Cohen & Manion, 1994; 107). Case studies investigate contemporary phenomenon within its real-life context and use multiple sources of evidence (Hartley, 1994; Yin, 1989). Both quantitative and qualitative methods can be employed in case study research (Cohen & Manion, 1994; Yin, 1989, 1993).

Action researchers interested in sharing lessons learned in a local context have utilized case study methods to document the process of inquiry and action to allow findings to be transferred more to other contexts. Multiple case studies offer the possibility of generalizing knowledge beyond the local contexts they are conducted in (Yin, 1989). The case study selection process is a critical issue in multiple-case study methods. According to Yin, the choice of school sites should be based on the claim of replication logic, not sampling logic (Yin, 1993). Yin (1993; 34) suggests that replication logic suggests that two or more cases should be included within the same study precisely because the investigator predicts that similar results (replication) will be found. In this situation confidence in the overall results are greater and findings can be considered more robust. Sampling logic, on the other hand, assumes cases are selected and chosen according to pre-identified representation criteria. This logic distorts the benefits of using the case study method.

Criteria for Evaluating Action Research

Winter (1989; 31) has observed that methods used in action research have what he calls "positivist echoes": in the central role given to the collection of facts through 'observation', 'diagnosis' and the 'monitoring of effects'. Winter (1989; 37) comments on Lewin's use of the term 'reconnaissance,' in which he used the analogy with wartime flights by aircraft to gather facts for bombing raids could accurately 'target' their 'objectives': an analogy Winter argues is not appropriate for characterizing action research as it has come to be understood in educational research. When action research has attempted to borrow and follow aspects of positivist investigation (i.e.,'positivist echoes'), the research process can be criticized by conventional social scientists as an incomplete version of 'real science'. However, in order to legitimize action research, it can, and should, be based on an alternative set of criteria. Observations, in action research can, but are not exclusively, based on representative samples. Unrepresentative samples have the tendency to undermine the ability to generalize and be confident that actions will be 'soundly' based. However, observations can be based on an alternative criteria of 'value' — what forms of observation are more likely to highlight previously neglected possibilities and less likely to confirm what is already known? (Winter, 1989; 32). The second positivist echo concerns methods for 'diagnosis.' The logic of action research is different from the logic of natural science (experimental testing of variables), yet also different from the logic of everyday action (awareness that practices have consequences and need justification) otherwise action research projects are merely time-consuming versions of 'what we already know' (Winter, 1989; 33). The objective of action research is to not to maintain a pattern of action but to critically change it, not to draw on existing levels of understanding but to develop it into new directions (Winter, 1989; 32). The third positivist echo identified by Winter (1989;33-34) is that of 'implementation' and the monitoring of effects. The positivist assumption is that theory is derived from the correct observation of one situation, and then taken to be the prescription for action in another. *Research* produces *findings* that are subsequently implemented in *practice*. This is exactly what action research is trying to avoid, since practitioners reaction to prescription is so often rejection. Winter suggests that this final problem can be resolved through the use of a set of principles for the conduct of action research (see below).

The action research process is a powerful, yet 'messy' process, and one that must respond to the demands of individual participants as well as the context within which they work if it is to meet its objectives (Oja & Smulyan, 1989). Oja & Smulyan (1989; 177) summarize several issues or dilemmas that are endemic in action research they believe must be addressed: (a) the impact of the action research project on the participating school's activities and concerns, such as project topic, longevity and influence on school practice; (b) questions of control, ownership and leadership of the project; and (c) choice of project goals such as improved practice, contributions to theoretical understanding or professional development, or organizational change. These issues are most often negotiated as the process evolves.

The previous discussion leads Winter (1989; 34-37) to articulate four problems characteristic to action research. First, practitioners have little additional time and energy to devote to research activities. How, then, can action research procedures be *economical?* The problem of how a small-scale investigation with the participation of a group of practitioners can lead to genuinely new insights. In order to differentiate action research activities from what people already do, they must be specific. Therefore, the second problem asks how can action research procedures be *specific?* Methods for an investigative stance must be clearly differentiated from methods of practice, yet be available to anyone who wishes to adopt them. The third problem asks how can action research procedures by *accessible?* Finally, if practitioners already possess an expertise and have agreed that time and energy are scarce, the research, in order to be valuable, must lead to a contribution that will be a genuine improvement of understanding and skill beyond prior competence. In order for the action research project to be worth the effort, to gain new knowledge, the process must more rigorous than the activities of everyday professional life. The final problem asks how can action research procedures be *rigorous?*

Winter (1989; 39-46) offers a set of principles for conducting action research to address these problems: (1) Reflexive critique; (2) dialectic critique; (3) collaborative resource; (4) risk; (5) plural structure; and (6) theory-practice transformation.

(1) Reflexive critique. Professionals work within a never-ending sequence of judgments about what is appropriate, worthwhile or interesting, why something happened, what is the best action to take. These judgments are open to question, but how can the process of making judgments be analyzed without imposing a further set of judgments? To understand this, Winter offers the principal of 'reflexivity' which refers to the idea that most statements in language are reliant on complex, interpersonally negotiated processes of interpretation. Reflexive means "bent back," so that, a reflexive judgment is inevitably bent back into the speaker's subjective system of meanings, creating an illusion that the judgment is an objective description of reality external to the speaker (i.e., reality is socially constructed). Reflexive critique addresses this problem by suggesting that several steps be taken: (a) data is collected through observation notes, interview transcripts, written statements from participants, or official documents; (b) the reflexive basis for this data will be made explicit, so that (c) claims may be transformed into questions and a range of possible alternatives are suggested that challenge taken-for-granted interpretations.

(2) Dialectic critique. In everyday professional life, situations, people and events present themselves in terms of a familiar vocabulary of explanatory concepts creating a stable, yet provisional world of meanings. When one steps back from this familiar set of meanings and reflects on it (such as in research), this world of meanings can be seen as highly incomplete, simplified and inaccurate. Dialectics is proposed by Winter as a method of analysis which genuinely pries apart familiar ideologies, without suggesting that there are an infinite choice of alternative interpretations available, and in doing so, helps the researcher decide what is significant. Dialectics is a general theory of the nature of reality

and of the process of understanding reality that relies on discussion and competent participation in the complex structures of language. It shares similarities with reflexive critique. In opposition to positivist methods that call for exhaustive observation of phenomena, and precise definition in order to identify cause and effect relationships, the dialectical approach subjects observed phenomena to a critique. The dialectic critique involves, instead, the investigation of the overall context of relations which gives the observed phenomena a unity in spite of their apparent separateness, and an investigation of the structure of internal contradictions which gives them a tendency to change. Data is grouped into meaningful categories and analyzed to find unity among apparent differentiation.

(3) Collaborative resource. The notion of collaborative resource addresses the problem of impartiality and the role of the researcher with respect to those in the institution that are participating in the research effort. The intent of the inquiry is to collect a number of viewpoints and, instead of trying to synthesize them into consensus, the researcher must begin to see differences between viewpoints in order to make them a rich source of interpersonal negotiation and challenge. All viewpoints should be considered valid collaborative resources analyzed without regard for status, which often gives some views more credibility than others. The researcher must strive not to fit views into anticipated or predetermined interpretative categories, rather the researcher's interpretative categories should be treated as data alongside data as well as ideas collected from other participants. This process will allow the researcher to consider ideas thought to be irrelevant or which do not fit within his conceptual framework. The action researcher's claims to objectivity are supported by the process of collaboration with others (member checks) that act as a check on the researcher's subjectivity.

(4) Risk. Professionals come to a research project with established reputations for competence. The action research process, as a process of negotiation, can constitute a threat

to that competence. The initiators of research necessarily put themselves at risk in the process of investigation: hypotheses are open to refutation; values may be challenged; provisional interpretations and relevancy of a situation may be questioned by participants; and anticipated sequence of events may be modified. In this process of engagement, where purposes change and innovation is at the level of practice, the researcher becomes one participant among many in the process of change that remains, in many ways, unpredictable. The conduct of the researcher should be such that he learns as much as possible in the process.

(5) Plural Structure. The research process seeks differences, contradictions, possibilities and questions as a way of opening up new avenues for action. Situations cannot be reduced to a consensus but must be presented in terms of a multiplicity of viewpoints which make up a situation. These multiple views can be embodied in a research report by including accounts from interviews and conversations to allow the reader to derive his or her own conclusions. Plural structure is in opposition to a positivist account that presents a linear progression of rational steps. Plural structure provides various accounts and critiques of those accounts ending not with conclusions, but with questions and possibilities intended to be relevant to various readers.

(6) Theory-practice Transformation. The relationship between theory and practice represents a crude separation that still haunts action research literature. Action research proposes to solve this impasse by emphasizing that theory and practice are not two distinct entities, but are interdependent and complementary phases of an integrated change process. The researcher is involved in a set of practical activities such as making contacts, collecting materials, or making meetings within a context. Practical actors carry out their activities in light of massive corpus of theoretical understanding. Each contains elements of the other. Mutual questioning is unending such that practice cannot reject theory since practical knowl-

edge must always be open to questioning. The outcome of theory is the transformation of practice. What seems impractical now may seem practical later, once situations have changed. Theory cannot confront practice with an authoritative interpretation of events as if to say that this is the real reality because it must recognize that theory itself be open to question. Theory, based on practice, is itself transformed with changes in practice.

PART II

ENVIRONMENTAL QUALITY ASSESSMENT IN FIVE SCHOOL ENVIRONMENTS

CHAPTER 4

PROJECT METHODOLOGY

This chapter outlines the research methods used to answer the research questions raised in Part I. Sampling techniques of sites and respondents, an account of the data collection methods and instruments used, the analysis procedure used during various stages or sequences of the field research, and measures taken to enhance the quality of the field study are explained within the context of the action research process. Finally, the multiple case study method used to conduct an aggregated across-case analysis is described.

Research Questions

The goal of this study was to contribute to the knowledge-base of environment-behavior research along two lines of inquiry: (1) substantive and theoretical advances in the understanding of environmental quality in school settings; and (2) research utilization and methodological advances in environmental assessment from an action research perspective. Chapter Two forms the basis for the substantive and theoretical questions concerning the nature of environmental quality in schools, the impact, if any, of environmental quality on educational outcomes, and the role of facility management in influencing environmental quality of the school. Chapter Three forms the basis for the research utilization and methodological questions concerning the role, if any, of environment-behavior research in contributing to the improvement of the environmental quality in schools, the ability to assessment environmental quality in local school contexts, and the effectiveness of action research in defining problems, providing solutions and increasing knowledge and awareness of environmental quality in schools. Table 4.1 below summarizes the research questions.

Table 4.1 Research Questions

Substantive & Theoretical Questions		
1. Environmental Quality		**What is the nature of environmental quality within the context of schools?**
	General Knowledge	(1a) What does the research literature report concerning the nature of environmental quality in schools;
	Local Knowledge	(1b) How do occupants perceive, if at all, the nature of environmental quality generally;
		(1c) How do occupants perceive, if at all, the nature of environmental quality in their particular school;
		(1d) To what extent do occupants perceive they have control over the state of environmental quality in their particular school.
2. Educational Outcomes		**What are the attributes of environmental quality that may have an impact on educational outcomes?**
	General Knowledge	(2a) What does the research literature report concerning the influence of environmental quality on educational outcomes;
	Local Knowledge	(2b) What do occupants perceive, if at all, as the influence of environmental quality on educational outcomes generally;
		(2c) What do occupants perceive, if at all, as the influence of environmental quality on educational outcomes in their particular school.
3. Facility Management		**What impact does facility management have, if any, on the perception of quality in schools?**
	General Knowledge	(3a) What does the research literature report concerning the impact of facility management on the perceptions of environmental quality in schools;
	Local Knowledge	(3b) What do occupants perceive, if at all, as the aspects of facility management that may have an influence on environmental quality of the school generally;
		(3c) What do occupants perceive, if at all, as the aspects of facility management that may have an influence on environmental quality in their particular school.
Research Utilization and Methodological Questions		
4. Environment-behavior Research		**How can environment-behavior research contribute to the improvement of the environmental quality in schools?**
5. Assessing EQ		**How can environmental quality be assessed in local school contexts?**
6. Action Research		**How effective is action research** in: (i) defining problems of environmental quality in schools; (ii) providing solutions to problems of environmental quality in schools; and, (iii) increasing the knowledge and awareness of teachers and staff regarding the physical setting as a tool in supporting their instructional activities.

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Research Approach

The research approach was divided into two-levels, the first are the process issues dealt with through a series of action research processes, the second are the substantive issues dealt with through the development of case studies which were then comparatively analyzed to answer more generally the questions concerning environmental quality, educational outcomes, environmental management, and the participatory assessment process. Figure 4.1 graphically describes the overarching research approach by conceptualizing the project methods hierarchically linking locally-based actions to generally-based substantive theory development.

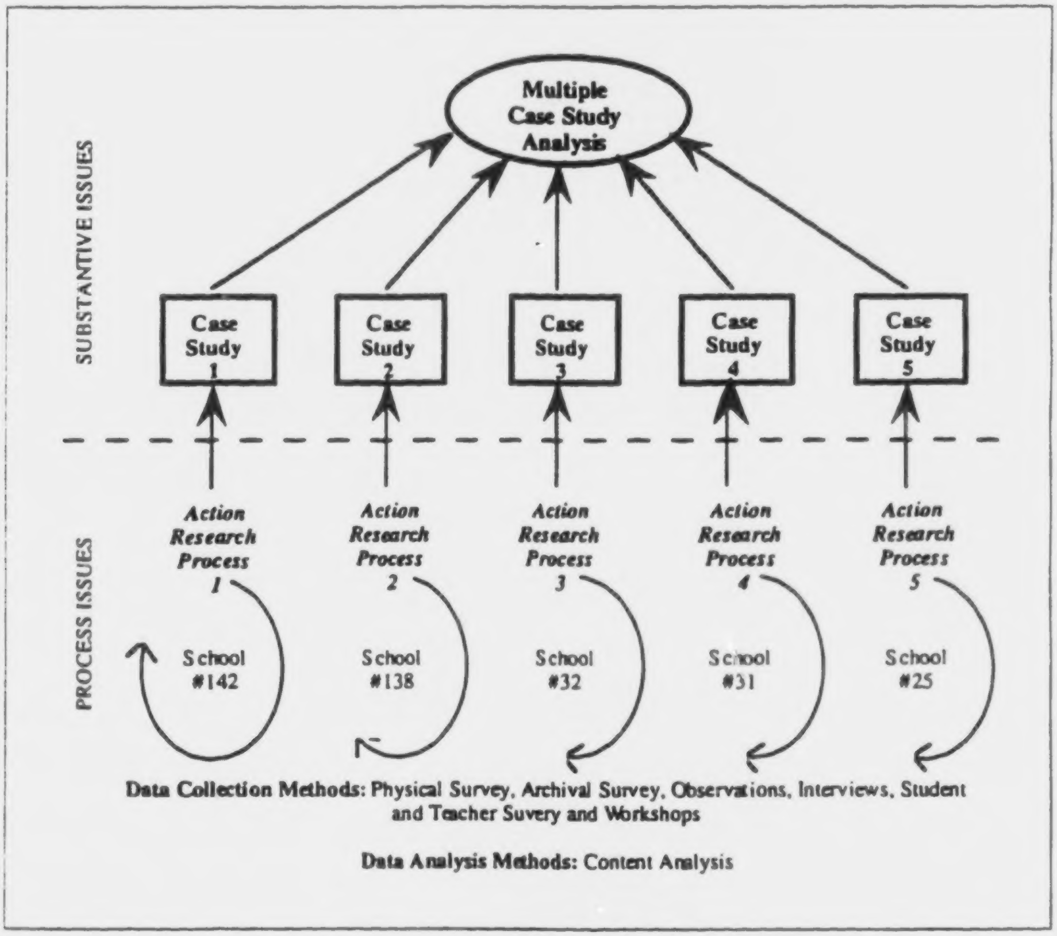
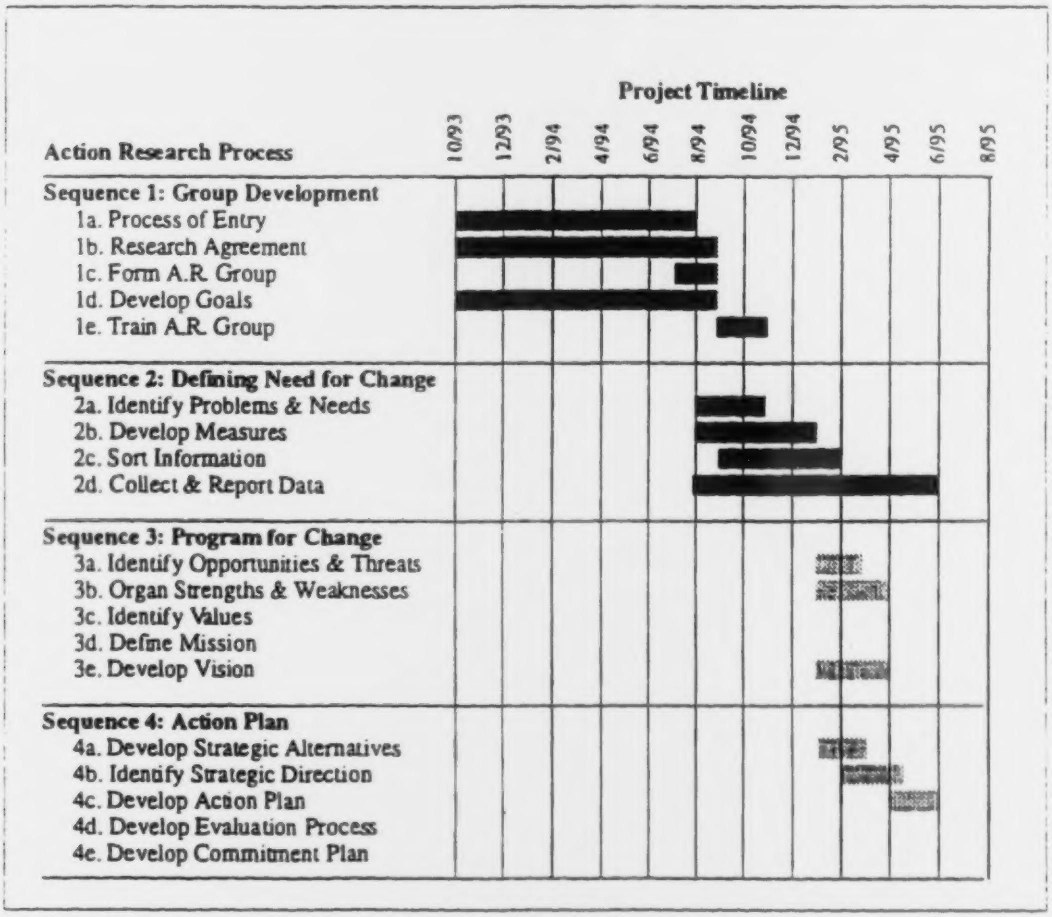

Multiple Case Study Analysis
SUBSTANTIVE ISSUES
Case Study 1
Case Study 2
Case Study 3
Case Study 4
Case Study 5
PROCESS ISSUES
Action Research Process 1
Action Research Process 2
Action Research Process 3
Action Research Process 4
Action Research Process 5
School #142
School #138
School #32
School #31
School #25
Data Collection Methods: Physical Survey, Archival Survey, Observations, Interviews, Student and Teacher Suvery and Workshops
Data Analysis Methods: Content Analysis

Figure 4.1
Research Approach: A Hierarchial Model of Research Methods Used in the Study

The Action Research Process

The type of action research model chosen for this dissertation combines a non-participatory empirical action research model and a participatory diagnostic phase model. Following Cunningham (1993), the procedureal process consisted of four sequences each with several distinct steps: (1) group development; (2) defining the need for change; (3) focusing and designing a program for change; and (4) implementing and developing an action plan. Figure 4.2 summarizes the project timeline and steps in the action research process followed in this project. What follows is a detailed description of the research approach and methods used to answer the research questions above.

Figure 4.2
Project Timeline and Steps in Action Research Process



Sequence 1: Group Development

(1a) Process of Entry

The objective of this step is to identify key individuals, build commitment to action, refine issues and criteria for success and form common interests.

Research Questions addressed in this step:
The nature of environmental quality: *(1b)*
Assessing environmental quality: *(5)*

This step took place between January and September of 1994. Activities in January included initial site visits to potential school sites with school system personnel. During this initial set of visits anecdotal evidence and stories of the impact of facility upgrades and management on the perceived environmental quality of the school were gathered. Methods for gathering this data included unstructured interviews and walk-through tours with school principals of four elementary schools and one middle school, informal impromptu encounters with teachers, custodians, security staff, and other administrators. Data was 'directly interpreted' (Stake, 1995; also see Sequence 2 below) in journal form to reflect on the multiple meanings of particular instances and episodes.

From these initial visits an understanding developed of the specific facility management processes taking place in the schools, and an understanding of the history of school interventions initiated by the public/private partnership. An informal report of questions, issues, concerns and findings from the site visits was completed for peer debriefing and review.

The criteria for case study selection included:

(1) a site that maximized the opportunity to engage the problem — schools that have explicitly dealt with environmental quality issues or schools that have expressed the need of doing so.

(2) sites where access was easiest — gaining cooperation and access to gatekeepers at the private/private partnership members became the first step toward access

to a small subset of schools. Field research in school settings is notoriously difficult due to internal cultural attitudes that research does not have any immediate impact or influence on what teachers do in the school (Maruyama & Deno, 1992).

(3) sites that can be feasibly accessed within available resources and geographic distance. Due to geographical distance, the limited physical access to sites may have limited the impact of the project in terms of field setting contact time and familiarization with school culture.

In November, a meeting was arranged with twelve school principals to present more detailed proposal for the project. Additional meetings with the private facility management company to clarify common interests took place with the result being a more refined set of project goals, interests and issues aligned with a larger group of interested and tentatively committed parties. A six-page project proposal was developed and circulated to all interested school principals for further consideration and discussion.

(1b) Drawing up an Agreement on the Research that will be Conducted

The objective of this step is to secure authorization to conduct an agreed upon research contract which states goals, justifications and expectations of the project.

Research Questions addressed in this step:
Assessing Environmental Quality: *5*
Action Research: *6*

Note that Cunningham (1993) indicates this step as the last step in Sequence 1 while it is placed second here. For this project, "Drawing up an Agreement on the Research that will be Conducted" occurred before the action research teams (working groups) were formed due to the particularities of the rules for research established by the school system.

Between the months of July through August 1995, more detailed discussions with principals to gain their interest, commitment and support of the goals of the project. A short 2-page project proposal outlining mutual interests was developed and circulated to a shorter list of interested school principals to solidify their commitment and agreement to participating in the project. Principals came to accept the agreement after negotiating scope and scheduling issues. For instance, originally two workshops were ideally planned, however, due to the impact this would have on the selected teachers, it was agreed that one workshop would be sufficient.

(1c) Forming an Action Research Group

The objective of this step is to identify individuals willing to take action, committed to the problem's resolution through recruiting interviews in which the purpose, methods and principles of action are explained.

Research Questions addressed in this step:
Assessing Environmental Quality: *5*
Action Research: *6*

During the month of September of 1995, principals from each school identified four individual teachers, learning coordinators and in some cases parent volunteers to participate in the action research group (working group). Principals were asked to consider the following criteria for selecting potential action research members:

1. teaching experience: from senior and master teachers to those just starting their careers;

2. school building experience: from a single year of residence to those that have been at residence in the school since its construction.

3. type of teaching experience: classroom teachers of different grade levels, master teachers, learning coordinators, teacher aids, and parent volunteers in classrooms.

Initially, a snowball or chain sampling was used for this project. The private facility management company assisted in identifying three of the five schools who were willing to share their environmental concerns. In initial exploratory site visits, these people were consciously sought out for their opinions and probed as to their interest in serving as a project site. Once sites were selected, principals assisted in identifying the best suited participants for the action research group. The research group in turn was able to mention other teachers or staff who might have something to add to a particular issue. The main criteria for sample size was to gain the broadest perspective feasible on the environmental quality of the school. Action research working group participants were encouraged to offer further informants to create the broadest perspective on the problem.

Table 4.2
Action Research Participants by Gender, Teaching Experience and Residence in Present School Building

School	Gender	Teaching Experience (yrs)	Type of Teaching Experience	Residence in Present School Building (yrs)
School #25	5 females	23	Pre-K	15
	0 males	28	4th Grade	20
		3	2nd Grade	3
		-	Kitchen Staff	6
		1	Parent Volunteer	1
School #31	4 females	6	Spec. Ed.	3
	0 males	15	Learning Coor.	7
		20	4th Grade	15
		8	Kindergarten	5
School #32	3 females	22	Spec. Ed.	15
	0 males	18	5th Grade	6
		8	1st Grade	10
School #138	3 females	23	Spec. Ed.	10
	1 males	22	4th Grade	14
		4	2nd Grade	4
		27	Kindergarten	17
School #142	3 females	20	Learning Coor.	10
	1 males	2	4th Grade	2
		22	2nd Grade	14
		8	Kindergarten	2

(1d) Developing Goals for the Action Research Group

The objectives of this stage is to cooperatively define common goals as a group which are able to be rearticulated during the process in such as way as to maintain interest and commitment of members.

Research Questions addressed in this step:
Assessing Environmental Quality: *5*
Action Research: *6*

Due to the fact that the majority of the scope and goals of the project were defined through earlier negotiation with school administrators prior to the identification of the action research working group, the goal setting process was omitted with working group participants. Instead, the researcher formally introduced the intended goals of the action research group during the individual interviewing process and again at the start of the workshop.

(1e) Training the Action Research Group

The objective of this step is to establish the need for a group building process which advocates cooperation and effectiveness through self-evaluations.

Research Questions addressed in this step:
Action Research: (6)

The first opportunity to address group process issues did not occur until the workshops (as described in [2c] below). Prior to each workshop and during the interview process, participants were prepared for the task of working together in a group to review and analyze the data gathered. Later during the workshop itself, procedural and group building issues arose informally. Comments from working group members concerning procedural and group building issues were discussed along side substantive issues without much difficulty.

Sequence 2: Defining the Need for Change

(2a) Identifying Problems and Needs

The objective of this step was to obtain initial perceptions, attitudes, and diagnosis from the perspective of organizational members of problems significant to the functioning of the organization; strive for multiple perspectives: use both propositional (general) and experiential (local) knowledge.

Research Questions addressed in this step:
Nature of environmental quality: *(1b), (1c), (1d)*
Role of facility management: *(3b), (3c)*
Assessing environmental quality: *5*

Beginning in August and ending in September of 1995, a physical facilities survey, organizational survey and a first phase of interviews were conducted. Descriptive data of physical facilities and building systems were obtained from the Department of Facilities in BCPS as well as through a facilities walk-through with the principal and/or building custodian and a photographic survey. Written descriptions of organizational philosophy, mission and educational programs were gathered from archival records. Later in the process achievement test scores, school attendance and population data were obtained from the Department of Evaluation and Research in the Baltimore City Public Schools for use in the comparative case study analysis.

In addition, the principal and custodian were interviewed concerning their perceptions of environmental quality and its maintenance generally and specifically within the school. The outcome of this step was an initial set of environmental quality concerns from which to confirm or discomfirm in the next phase of interviews with individuals of the action research working group.

(2b) Using Interviews to Develop Measures

The objective of this step is to define organizational problems, clarify research measure and criteria through the definition of issues, problems, incidents, how to carry out research, and ideas or questions which might be used in a questionnaire.

Research Questions addressed in this step:
Nature of environmental quality: *(1b), (1c), (1d)*
Educational outcomes: *(2b), (2c)*
Role of facility management: *(3b), (3c)*
Assessing environmental quality: *5*

Interviews

During this phase of the process individuals from each action research working group, as well as a number of other selected parent volunteers and parent liaisons were individually interviewed utilizing an interview guide which asked questions within the context of fourteen attributes of environmental quality (See Appendix). The selection of participants for interviews were broader including not only the core working group but also additional parent volunteers, parent liaisons, principals and administrators, and non-instructional school staff such as custodial and kitchen staff. An initial list of fourteen attributes from the original interview guide were recast as ten attributes with more locally responsive titles in order to create more meaningful and immediately recognizable categories for the broadest set of participants.

Take-home Worksheet

A take-home worksheet was given to each working group member as a means of preparing them for the additional questions to be posed at the follow-up workshop. The take-home worksheet also provided another means for participants to express themselves on their own time and also to give them an opportunity to respond to issues they had not thought of during the interview. Data from these worksheets were added to the collection of data to be analyzed for consideration at the workshop.

Student Survey

At the end of their interview, working group participants who were classroom teachers were asked to distribute a short five-item student survey to their students. The student survey focused primarily on what students like most about their classroom, what they like the least about their classroom, what their favorite place in the school is and why, and finally had them draw their favorite place. The return rate for the surveys ranged from 25% to 100%. The student surveys were obtained too late to be utilized as additional data for the workshop.

Behavioral Observations

While interviews were being conducted by the principal investigator, the research assistant was conducting descriptive behavioral observations throughout a single school day. The research assistant was asked to develop description observations of activities (Spradley, 1980) by looking at a series of naturally occurring social situations and trying to record as much as possible. His task was to approach the activity in process without any particular question in mind, but only the general question, "What is going on here?" Simultaneously, a photographic survey was conducted to develop the richest description as possible. These descriptive observations were then analyzed later for the presence of possible environmental quality concerns and added to the list of concerns gathered through interviews for further consideration, interrogation and discussion at the workshop.

The purpose of gathering observational data from each school case study was to (a) obtain an objective record of the location and frequency of activities within the school: (b) obtain a record of activity not only in classroom spaces (self-contained, open plan, and modified open plan), but also in auxiliary spaces such as corridors, restrooms, entrance foyers and areas, cafeterias, gyms, media center/library/computer spaces; (c) document researcher perspectives and observations concerning all the attributes of environmental quality to compare to those of the occupants.

Observational data was be documented in three forms: (a) photographs when and were possible; (b) systematic behavioral mapping of specific stations with the school building; (c) and descriptive field notes following a specific line of questioning outlined in the observational worksheet. The typical observational schedule followed several "stations" throughout the school building:

Station #1: Outdoor Entrance walk
Station #2: Front Lobby/Administrative Offices
Station #3: Corridor
Station #4: Library/Media Center
Station #5: Corridor
Station #6: Cafeteria/Auditorium
Station #7: Corridor
Station #8: Open Classroom
Station #9: Corridor-first floor
Repeat

The following instructions outline a typical schedule of tasks at each station given to the research assistant:

> Stand at station for 5 minutes before mapping behavior. During this time, document any impressions of the place — immerse yourself in the place and attempt to get a full description of the experience of being in this place. Once the five minutes are completed, map whatever behavior you observe at that moment in time (persons, activities, and location) on the behavior map for that station. Once this place is described and mapped, move on to the next place station. Repeat this procedure at regular intervals for each station.

Each cycle took approximately one hour, with short breaks between cycles, the research assistant was able to move through between four and six cycles during one school day.

Unobtrusive observation is difficult to conduct due to the nature of the school with dozens of eyes on the researcher. This situation was used as an opportunity to further broaden perspective on environmental quality concerns in the school. In those moments when the research assistant was confronted with an inquisitive teacher, parent or student he was instructed to allow time for informal social encounters and to have an answer to the often repeated question "what are you doing," by proactively responding back "I am studying how well your building school meets your needs...what do you like or don't like about your school building?" This strategy allowed the research assistant to obtain further anecdotal evidence and instances of environmental concerns from a set of occupants not captured during observations or interviews. In addition, this strategy of actively participating with occupants in situ provided yet another method of gaining as wide a perspective as possible in the given short duration of each field visit — a single school day.

After each field research day, the research assistant and principal investigator would meet for a debriefing process of comparing notes, observations, perceptions and formulating additional questions for action research working group participants.

(2c) Sorting Information into Categories

The objective of this step is, through a sorting procedure, order and categorize interim statements of concern and issues describing the problem to form a conceptual framework.

Research Questions addressed in this step:
Nature of environmental quality: *(1b), (1c), (1d)*
Educational outcomes: *(2b), (2c)*
Role of facility management: *(3b), (3c)*
Assessing environmental quality: *5*
Action research: *(6i), (6ii), (6iii)*

During the months of November 1995 and February 1996, workshops were conducted at the five case sites. One school (School #142) scheduled three workshops during this period in order to advance their work to that of addressing their concerns (see following steps for a complete description of that process).

Data Analysis

Data gathered from the previous step was analyzed through "categorical aggregation" (Stake, 1995). Through categorical aggregation new meanings about a case can obtained through the aggregation of instances until something can be said about them as a class. Categorical aggregation, a quantitative method of analysis, seeks a collection of instances, expecting that, from the aggregate, issue-relevant meanings will emerge. Stake (1995) makes the argument that at no point does data collection *end* and analysis *begin*, rather analysis and synthesis occurred side-by-side at each stage in the action research process.

In the action research process not only is the interactive role of the researcher need to be acknowledged, but also the interactive role of the members of the action research group. The action research working group assisted both in direct interpretation in clarifying the meaning of particular environmental concerns or instances, and in categorical aggregation, suggesting new categories or eliminating categories that were not meaningful.

Interviews were subjected to a tape-based analysis in which the tape recordings of each interview were listened to while an abridged transcription was prepared by the researcher (Krueger, 1994). Transcripts of interviews, debriefing notes, photographic surveys, behavioral observations, archival evidence and personal observations were all categorically analyzed by the researcher to identify all potential environmental concerns. These instances of environmental concern based in experience of participants and other occupants in the school were further categorized into a more concise list of main concerns and given provocative names that were grounded in the language of participants.

Interviews were designed to ellicit comments from participants according to a predetermined, yet evolving list of environmental quality attributes (i.e.,"could you give me some examples of the kinds of *safety and security* concerns you have had to deal with at your school in the last year?"). In this manner, it was possible for the researcher to tag each environmental concern with the attributes of environmental quality that were experienced with respect to that concern. Once the main list of environmental concerns were categorized for each case they were and tagged with the environmental quality attributes most represented that concern.

The Workshop

In an organizational context, studying groups is most natural method for gathering knowledge about social events and human interaction (Steyaert & Brown, 1994). Steyaert and Brown (1994; 125-126) identify three types of group methods based on purpose (exploration, generation and intervention) that are either natural or created forming six generic group forms. Group forms are not exhaustive and overlapping exists, but specifying group characteristics is important to understand differences required in the role of the researcher, the involvement of the group members and the kind of interaction that will emerge. Group interviews and focus groups, for instance, are often considered as the most characteristic form for data collection, and are one of the most common research data gathering methods used by action researchers. The group acts, in effect, as a self-reflexive generator of data (e.g., identifying and prioritizing issues, setting evaluative criteria, etc.). Research on effective focus group interviewing indicates that methods are constantly changing (Krueger, 1994; ix-x) :

(a) smaller groups of 5-7 are currently thought to offer more opportunity for individuals to talk, and more practical to set up and manage, than the old requirement of 10-12 participants;

(b) a variety of analysis strategies beyond the assumed transcript-based analysis are being developed that show promise of increasing practicality without sacrificing rigor; and,

(c) the benefits of nonresearcher involvement in assisting in the process (skills, connections, energy and ideas) has replaced the old assumptions concerning the nonresearcher's limited background in research strategies.

The goal of the workshop, similar in form to the focus group method of applied research (Krueger, 1994), was to actively involve working group members in the categorizing and sorting data, and formulating results and findings. More specifically, the purpose of the workshop was to obtain from the working group (a) a confirmation or refutation of the list of environmental concerns developed during categorical aggregation analysis, (b) further clarification of the current set of identified environmental concerns, (c) identification of additional environmental concerns not identified, (d) a prioritization of environmental concerns, (e) and a conceptual mapping of the perceived relationships between environmental concerns and several educational outcomes.

Informational props for the workshops consisted of (see Figure 4.4):

- annotated floor plans (1/16") with environmental concerns bulleted;
- a series of issue cards (4" x 6") with single environmental concerns listed with a provocative title;
- a photographic survey board with environmental concerns tagged under each photograph;
- a issue matrix — a blank priority x educational outcomes matrix.

The process of the workshop was a follows:

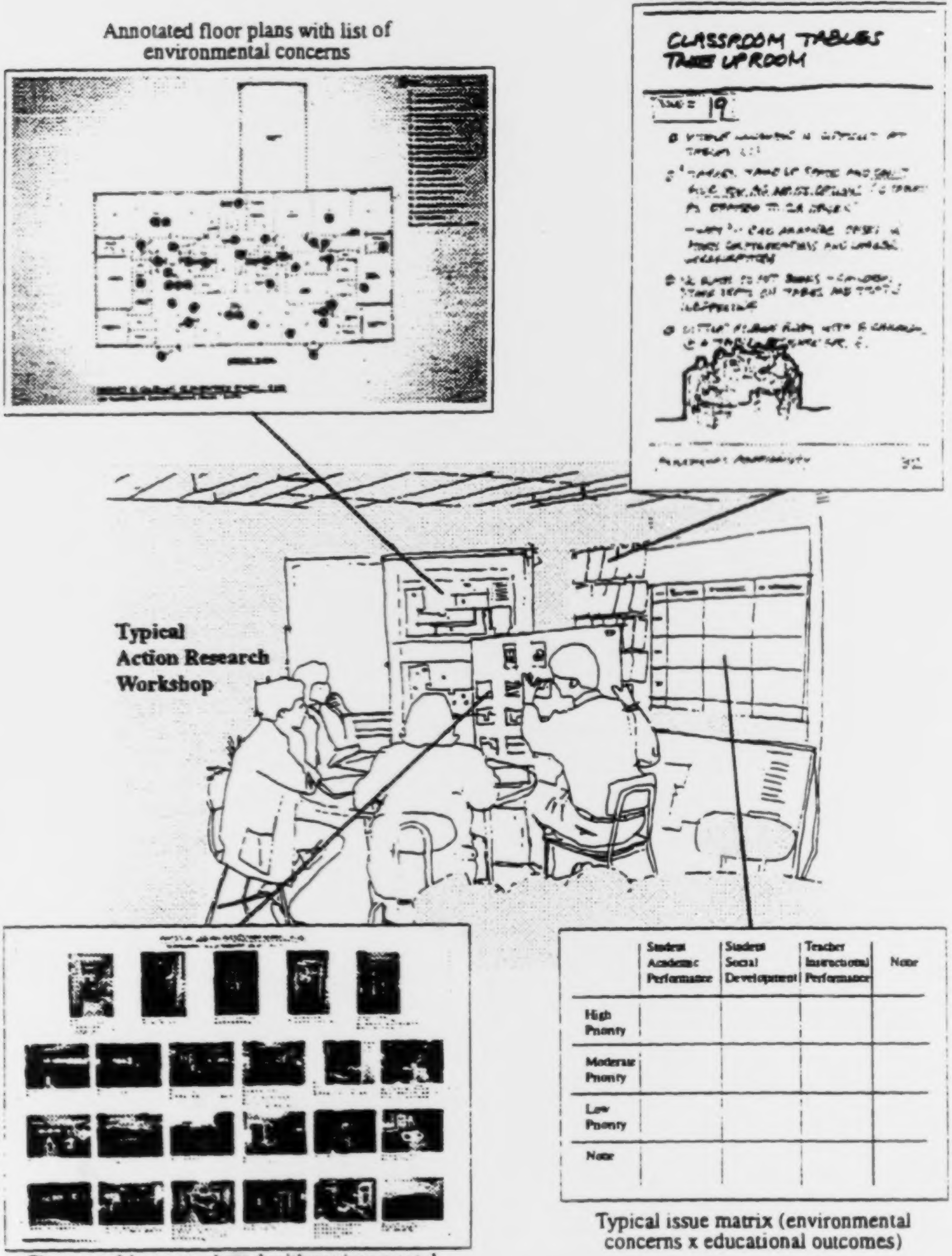
(1) The goals and objectives of the project overall and the purposes of the workshop specifically were reviewed and discussed;

(2) The facilitator introduced the list of environmental concerns one at a time, represented by the issue cards and illustrated by plans and photographs, condensed from the interviews, observations, and worksheets. Open discussion of issues that caught the attention of the group were discussed before moving on to other issues. The form and description of certain issues and concerns were allowed to be revised or rejected at this stage if there was agreement within the group;

(3) After the discussion of the more familiar and controversial issues and concerns subsided, the facilitator moved the attention of the group to the remaining concerns not addressed with the same objective of open debate on the validity of the concern in question. In addition, the facilitator would ask the working group if there were any additional environmental concerns they felt had not been addressed in the workshop as yet;

(4) Once all issues were discussed, the facilitator then asked the group to collectively decide what level of priority the environmental concern was to them and their school. In addition, they were asked to agree on whether they felt the concern may be having an impact on any one of three educational outcomes, student achievement performance, student social development, or teacher instructional performance. If the environmental quality issue was not of concern then it was placed in the "not a priority" category, and if an concern was not seen as affecting any of the three educational outcomes it was placed in the "none" category. These issues were then mapped visually onto an issue matrix.

Figure 4.3
Elements of the Action Research Workshop


CLASSROOM TABLES TAKE UP ROOM
19
32
Typical Action Research Workshop

Annotated floor plans with list of environmental concerns

4"x6" Issue Cards with single environmental concerns described

	Student Academic Performance	Student Social Development	Teacher Instructional Performance	None
High Priority				
Moderate Priority				
Low Priority				
None				

Photographic survey board with environmental concerns tagged under each photograph

Typical issue matrix (environmental concerns x educational outcomes)

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(5) Finally, the facilitator encouraged discussion on the topic of possible next steps the research could take with regard to addressing some of the environmental concerns raised. Typically, alternative solutions to the higher priority issues were discussed within the context of the act of prioritizing so these points could be again raised but within a context of problem solving. If it was appropriate, a follow-up workshop could be arranged to discuss these possibilities. Only in one case (School #142, see Sequence 3 & 4) were additional workshops scheduled to go on the solve the environmental concerns identified.

(2d) Collecting and Reporting Data

The objective of this step was to survey the larger population of individuals who can provide information and perspective on an issue and that represent the perspectives of their peers.

Research Questions addressed at this step:
The nature of environmental quality: *(1b), (1c), (1d)*
Educational outcomes: *(2a), (2b), (2c)*
Facility management: *(3b), (3c)*
Assessing environmental quality: *(5)*

Teacher Survey

Based partly on the results of the workshops, a teacher survey was developed by the researcher to survey a broader set of teachers concerning their perceptions of the degree to which attributes of environmental quality have been a hindrance to their teaching or their students' learning, their perceptions of the dependability of these attributes, as well as, their over all satisfaction and fairness with the degree to which their environmental quality concerns have been managed. The return rate was 24% across all schools. Due to the low return rate, the results of the teacher survey were aggregated across all cases to form one of several datasets for the comparative case study.

Case Reports

The case reports acted as a summary document that combined the workshop results, anecdotes, interview transcripts, observations, and photographic data. Each case report formed a narrative of the key environmental concerns within its unique educational and social context (see Volume II). The case report includes: (a) a description of the educational program and philosophy; (b) a description of the school building and surrounding physical setting; (c) a series of vignettes of environmental concerns; (d) a set of findings of the same environmental concerns summarized and organized by environmental quality attributes ; and, (e) a condensed list of the environmental concerns ranked by priority by the action research working group. Preliminary reports were circulated among the working group for feedback and revisions. Final reports were then circulated to a wider audience.

Multiple Case Study Analysis and Report

In addition to the single case reports, a report summarizing a comparative case study analysis was circulated first in preliminary form in May, 1996 and then in final form in June, 1996. The preliminary report was first circulated to each school and the school district. The final report was circulated to a wider audience.

This dissertation consists of a case study comparison of a series of action research processes that generally followed a naturalistic inquiry linked with formative evaluation methods. This strategy provided the ability to address the local context, while, through the use of the case study method, simultaneously attempting to generalize beyond any one school setting. The instrumental case study was chosen as an approach to theory development where the cases serve to understand phenomena or relationships within it, and where the need for categorical data and measurements is greater to concentrate on the relationships identified in the research questions (Feagin, Orum, and Sjoberg, 1991).

The case reports generated from discussions with each school were compared and analyzed for differences in aspects of environmental quality, environmental management processes and practices, and several educational outcome indicators. Prioritized environmental concerns data from each individual case were aggregated in two ways and analyzed to produce the potential for more transferable findings. First, data from all cases were aggregated to identify (a) the strongest environmental concerns, (b) the environmental quality attributes of most concern for school occupants, (c) patterns in the perceptions of the relationships between environmental quality attributes and educational outcomes, and (d) patterns in the perceptions of the relationships between environmental quality attributes and facility management. Second, data was aggregated into those schools who's facilities were privately managed (Schools #25, 32, 142) and were not privately managed (Schools #31, 138) to determine patterns in the role of facility management in the educational process by simple correlational analysis between aggregated student achievement test score data and the number of high priority environmental concerns perceived as the domain of facility management by the working group.

Sequence 3: Designing and Focusing a Program for Change

The anticipated project scope of this dissertation was to encompass what is described by Cunningham (1993) as the first two sequences of the action research process: "group development" and "defining the need for change," or as described by Susman and Evered (1978), the "diagnosing" phase in which problems and issues are identified and defined. In all but one case the action research process ended there. Only Robert W. Coleman Elementary School #142 expressed an interest in continuing the process by actively addressing some of the high priority environmental concerns which surfaced from the workshop process. For this reason, the remainder of Cunningham's action research process (1993) is included and commented on here in light of School #142's experience.

(3a) Identifying Opportunities and Threats

The objective of this step is to scan the external environment for demographic, economic, political and extra-organizational factors that may impact the ability of the organization to control.

The action research working group began to look, rather informally, at the opportunities rather than both opportunities and threats, from the external environment on the impact of their efforts at environmental and educational change.

(3b) Outlining the Organization's Strengths and Weaknesses

The objective of this step is to scan the organization for resource presently committed and commitments valuable to a desirable future for the organization.

The working group identified several volunteer groups who were already scheduled to make physical changes to the building. They also realized that they needed to involve the School Improvement Team and the principal if change was to occur.

(3c) Identifying Values (Organizational Philosophy)

The objective of this step is to identify the important assumptions, goals and ideals of the organization.

(3d) Defining the Mission

The objective of this step is to prepare a mission statement which formally justifies the organization's existence with respect to community and societal educational needs.

(3e) Developing the Vision

The objective of this step is to develop a statement of the organization's desirable futures, directions and goals.

These three steps could be summarized in School #142's efforts to establish itself as a community school that offered a variety of social and educational services to the surrounding community. The vision vaguely touched on the changes in the physical environment that would be required to meet their social and educational goals. During a meeting with the principal, who crafted the vision, these environmental planning issues were discussed without much follow-up or action on the part of the working group or the principal.

Sequence 4: Implementing and Developing an Action Plan

(4a) Developing the Strategic Issue or Alternative

The objective of this step is to collect and analyze alternative strategic issues to be adopted in the implementation of the intervention process.

Very little time or emphasis was placed on this step. The working group was concerned with creating change for the following school year and settled on an adaptive/reactive strategy, over other long-term strategies which could have been adopted to address the complexity of the problems they had outlined in the workshop. The group focused on several immediate concerns related to space planning layout that could be feasibly addressed during the summer months.

(4b) Identifying Strategic Direction for the Issue

The objective of this stage is to identify practical alternatives for resolving the issues through the development of proposals for intervention and action.

Due to the working group and the principal's complete focus on immediate problems, a set of alternative space planning design solutions were generated to address as many environmental concerns as possible. These design solutions were discussed with the School Improvement Team.

(4c) Developing an Action Plan

The objective of this step is to prepare a written agreement of formal document that identifies a series of intended strategic actions in the form of a list of projects with tasks, target dates and people responsible.

Due to an 'external threat' to School #142 from the school system, no formal action was taken on the findings of the action research working group for the following year. School #142 was one of a number of schools in the system slated for Reconstitution (a administrative management reorganization plan imposed by the State in low performing schools). As part of the reconstitution, the school was required to submit an Action Plan to explain how they would go about improving conditions at the school to be more favorable to increasing student performance. The School #142 Case Report (See Volume II) was submitted in an Appendix to the Action Plan to the State of Maryland. State officials purportedly perceived the case report as a critical summative evaluation, not a formative evaluation aimed at proactive and positive collaborative action steps the school was already taking to improve the environmental quality of their school.

(4d) Developing an Ongoing Process of Evaluating, Updating

The objective of this step is to develop an evaluation process that assesses the framework, levels of commitment, problems addressed, effectiveness of actions, and degree of positive change.

(4e) Developing a Commitment Plan

The objective of this stage is to develop an implementation plan that is incremental, recognizes immediate needs, while illustrating the grand design and steps, and allows individuals to articulate problems and/or projects in relation to their roles and responsibilities.

These final two steps in the action research process outlined by Cunningham (1993) were not completed by School #142.

Criteria for Assessing the Action Research Process

From the literature on action research (Chapter 3) the following criteria have been developed to assess an action research process:

1. *Criterion of Value*: Do the forms of observation and data gathering more likely to highlight previously neglected possibilities and less likely to confirm what is already known?
2. *Criterion of Responsiveness*: Does the action research process respond to the demands of individual participants as well as the context within which they work?
3. *Criterion of Accessibility*: Are research procedures and activities sufficiently accessible to be available to anyone who wishes to adopt them?
4. *Criterion of Economy*: Has the action research process respected participating practioners concerns of devoting time and energy to research activities?
5. *Criterion of Specificity*: Have research procedures and activities been specifically differentiated from what practitioners normally do in order to generate new insights?

6. *Criterion of Rigor*: Are research activities more rigorous than the activities of everyday professional life?

7. *Criterion of Ownership*: Have participants taken control, ownership and leadership in the action research project?

8. *Criterion of Competence*: Does the research lead to a contribution that will be a genuine improvement of understanding and skill beyond prior competence?

9. *Criterion of Impact*: Has the action research project had an immediate impact the participating school's activities, concerns or practice?

10. *Criterion of Change*: Does the action research process critically change the patterns of action and develop new directions to understanding?

CHAPTER 5

CONTEXTS AND SETTINGS: URBAN, SCHOOL SYSTEM, LOCAL

The purpose of this chapter is to briefly describe the various overlapping social, economic and political contexts within which the five schools in the study operate. These contexts can be identified loosely by scale as the urban context, the context of educational reform, urban school system context and the local school/community setting. Following this brief outline of these three contexts, five case profiles are presented to introduce the educational and architectural structures of each individual school.

Urban Context

Baltimore has been described as "the southernmost city of the North, and the northernmost city of the South, its population and physical structure marked by the slave plantation, the merchant ship, and the factory" (McDougall, 1993;1). Over the past century, Baltimore has become a predominately black community ranked the 7th largest in the country (59%) yet is the14th largest city in the U.S. with a total population of 736,000 (among cities of 200,000 or more population,1990 Census Bureau). One of the difficulties with continued growth of Baltimore City's economic vitality is its "inelasticity" (Rusk, 1996); Baltimore City's urban land growth has been legislatively locked into an 80.8 square miles established in 1918. As a result, Baltimore City has experienced a 23% decline in its population in the last 40 years.

Baltimore is a city with urban challenges not unfamiliar to other larger urban centers in the United States. Baltimore City suffers from high rates of poverty (22% in 1990), crime, unemployment (9.4% in 1991, Ranked 11th) school drop out rates, violence in schools, illegitimate children, one-parent family households (46.1% of all households in 1990), drug

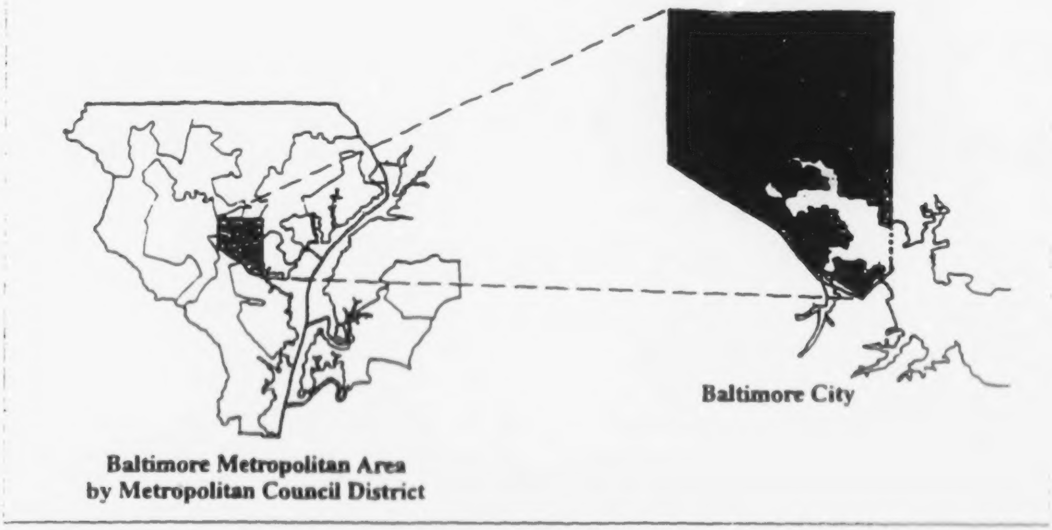
Baltimore City
Baltimore Metropolitan Area
by Metropolitan Council District

Figure 5.1
Maps of the Baltimore Metropolitian Area and Baltimore City

Table 5.1
Population, Racial Composition, Poverty Rates and Manufacturing Employment in the Baltimore Metropolitan Area and Baltimore City

Statistical Category	Baltimore Metropolitan Area	Baltimore City
Population		
1950	1,472,000	950,000
1990	2,380,000	736,000
% Change	62% growth	23% decline
Racial Composition (1990)	26%	59%
Per Capita Income (1989)	$16,596	$11,994
Poverty Rates (1990)	10%	22%
Manufacturing Employment		
1973	18%	
1989	10%	
% Change	25% decline	

Note:
All statistics taken from the 1990 Bureau of the Census of the United States Department of Commerce unless otherwise noted.

use and addiction rates, and welfare receipients (16.4% of households in 1990, Ranked 10th), deteriorating neighborhoods, and poorly performing schools and other public services.

Table 5.1 briefly outlines differences in population, racial composition, poverty rates and manufacturing employment between the Baltimore Metropolitan Area and Baltimore City. In addition, the growing racial and economic isolation continues as does the familiar pattern of suburbanization of not only middle class whites, but upper-middle class blacks as well where half of Baltimore area's upper middle class blacks live in suburbia (Rusk, 1996; ix).

Baltimore City has recently received the designation of an Empowerment Zone by the federal government entitling the city's for needy neighborhoods up to $100 million in federal grants. Baltimore has identified 112 intiatives intended to transform its neighborhoods. These initiatives should have some positive impacts on Baltimore City schools.

Context of Educational Reform

Many argue that there is a crisis in American public educational system that can best be described as a quagmire of conflicting socio-economic, political, bureaucratic and cultural problems and issues (Kozol, 1967, 1991; Kretovics &Nussel, 1994; Boyer, 1988). There are numerous reasons cited for the current crisis in U.S. schools in general, and urban schools in particular, from (a) conflicting societal influences such as politics, public opinion and the litigious legal climate of desegregation and teacher unions; (b) the deterioration for the socio-economic conditions which have plagued inner-city communities for decades (Wilson, 1987); (c) internal public schooling debates and issues such as gridlocked educational policymaking, bureaucratic structure and governance of urban school boards (Borman & Spring, 1984). Bringing the crisis full circle is the ever-present ideological dimensions of schooling — bringing the inequities of society such as class, race, gender and ethnicity directly into the classroom setting (Kretovics & Nussel, 1994).

Urban School System Context: Baltimore City Public Schools

The Baltimore City Public Schools (BCPS) has been in the center of both the pressures of national reform and community-based initiatives to improve urban schools. Recently, BCPS embraced site-based management in what it calls the Enterprise Schools Program where 34 public elementary, middle and high schools are currently designated to be self-governing in the management of their financial resources, personnel, curriculum, educational policy and facilities. A School Improvement Team (SIT) has been formed in each of these schools to provide policy and management oversight, program assessment and mobilization of the community's participation. Two schools in this study, Robert Coleman Elementary School #142 and Harriet Tubman Elementary School #138 are currently taking part in this program which is planned to be expanded to the entire district in the coming years.

Due to BCPS problems of low achievement in comparison to national averages, low attendance rates, minimal parent involvement, and rising school violence the Superintendent of Schools welcomed a variety of alternative solutions and programs to address the problem. One controversial initiative undertaken by a private educational management firm involved at its peak twelve schools within the system.

Two schools in this study, Dr. Rayner Browne Elementary School #25 and Mildred Monroe Elementary School #32 between July 22, 1992 and March 7, 1996 participated in this public/private partnership initiative and were subsequently designated "Tesseract schools" managed by a private educational management firm responsible for all instructional services, the lead partner in a larger effort that included a facility management company responsible for all non-instructional support, an accounting firm responsible for managing the schools' fiscal operations, and a computer company.that developed the computerized curriculum that supported Tesseract. This alliance as it was called, managed operated and maintained nine public schools in BCPS serving over 4,800 students.

Schools #25 and #32 received new computers and software, rehabilitated school buildings, and a new educational program. Facility improvements included lighting retrofits, mechanical system renovations, roof replacements, window replacements, landscaping projects, intrusion and firm alarm upgrades, bathroom remodeling, extensive painting and carpet installation. The Tesseract educational program included a personal education plan for each student, to be signed off by parents, specially designed staff development meetings, instructional interns and aids to increase the number of adults in the classroom. new instructional technology, learning activity areas and movable table furniture. a number of strategies for increasing parental involvement, as well as other innovations like telephones in classrooms, increased supplies, use of whole language and math, and other assessments and customized instructional methods.

Local School Settings

The following five case profiles describe a confluence of administrative, programmatic, and architectural issues and challenges each school in the study is currently grappling with in response to the larger urban and system context described above.

At the time of the study, two schools were experimenting with a public/private partnership while the two schools continued to be managed by BCPS. A fifth school elected to outsource its facility management services to the same company subcontracting to the private educational services company while retaining its autonomy over curriculum and instruction. Figure 5.2 identifies the locations of the five schools in Baltimore City. Table 5.2

on the following page provides a comparative case profile of the five schools in this study with respect to building and educational program description.

Figure 5.2
Geographical Location of the School Cases within Baltimore City

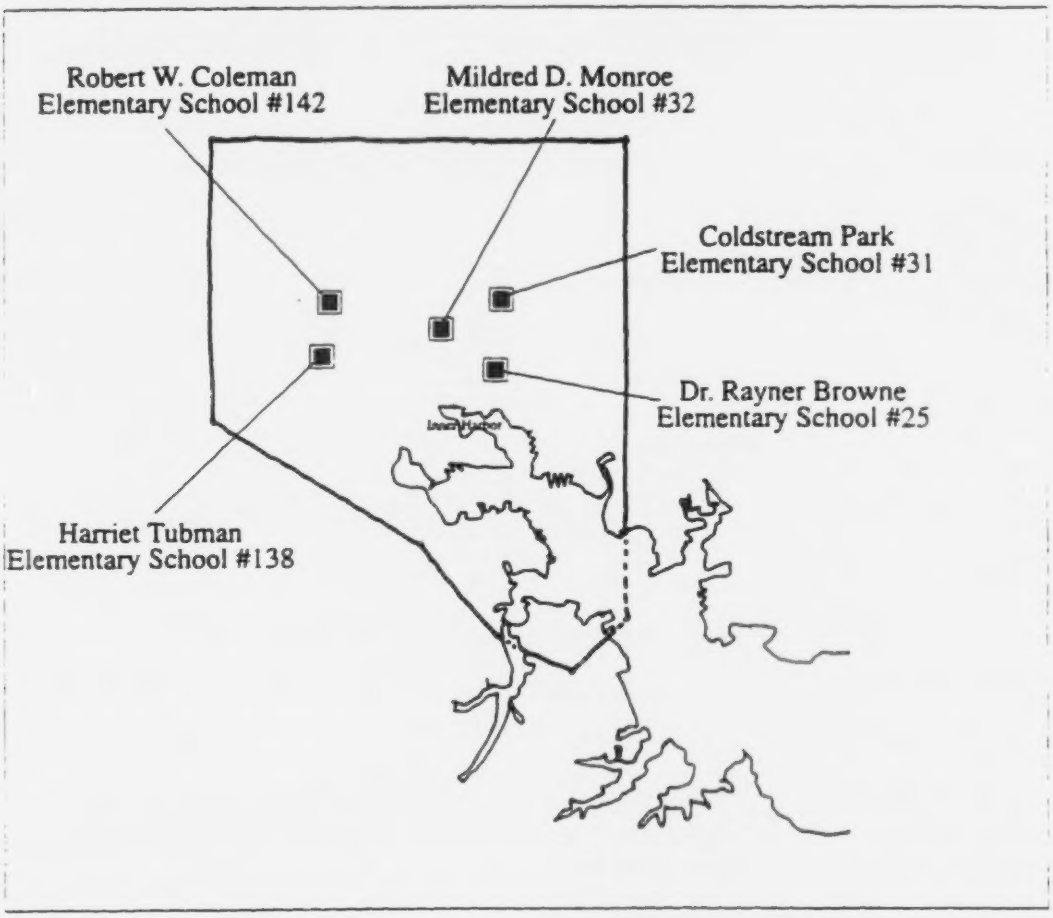
Robert W. Coleman
Elementary School #142
Mildred D. Monroe
Elementary School #32
Coldstream Park
Elementary School #31
Dr. Rayner Browne
Elementary School #25
Harriet Tubman
Elementary School #138
Inner Harbor

Table 5.2 School Case Study Profile Comparisons

Profile Categories	School Cases				
	#25	#31	#32	#138	#142
BUILDING DESCRIPTION					
Date Constructed	1976	1979	1971	1979	1980
Instructional Plan Layout	Open Plan	Self-Contained Pod	Self-Contained Classroom	Open Plan /Self-Contained Classroom	Open Plan /Self-Contained Classroom
Building Systems	A/C	A/C	No A/C	A/C	A/C
Facility Management Services	Private	Public	Private	Public	Private
Building Size Instructional Space GSF	17,981	36,470	18,104	24,080	18,743
Assembly Space GSF	6,522	11,924	8,816	5,685	4,736
Facility Support Space GSF	11,384	31,248	20,908	15,040	16,744
Total Building GSF	**35,887**	**79,642**	**47,828**	**44,805**	**40,223**
Building Space/Student[1]					
GSF Instruction/PreK-K[2]	38.0	55.0	58.3	45.1	25.5
GSF Instruction/1-5[2]	27.1	30.9	31.4	28.7	18.7
Total GSF Instr./Student[3]	47.7	56.6	64.7	57.3	31.0
GSF Assembly/Student	18.7	20.7	34.7	13.5	8.1
Total GSF/Student	**103.1**	**138.0**	**188.3**	**106.7**	**69.1**
PROGRAM DESCRIPTION					
Organization	PreK-5	PreK-5	PreK-5	PreK-5	PreK-5
Educational Administration	Private	Public	Private	Public	Public
Educational Program Curriculum	Tesseract	BCPS	Tesseract	BCPS	BCPS
Instruction	Cooperative Learning	Cooperative Learning	Cooperative Learning	Cooperative Learning	Cooperative Learning
Student Population 1993-94	383	597	266	446	528
1994-95	376	549	263	408	492
1995-96	**348**	**577**	**232**	**420**	**582**
Student/Teacher Ratio Kindergarten	**25:1**	**24:1**	**19:1**	**23:1**	**28:1**
Grades 1-5[4]	**24:1**	**30:1**	**27:1**	**25:1**	**36:1**

Notes

[1] Student population used in calculations was based on the 1995-96 school year.

[2] Instructional GSF included in this calculation includes only primary instructional space (space contained by the classroom area only) and does not include instructional support space or supplemental instructional space typically shared by other classes and located either adjacent to in other locations in the building.

[3] Total Instructional GSF/Student includes all grade levels and all forms of instructional space within the building. This number represents the total *potential* instructional space available to any one student within the building.

[4] These calcuations do not include special education class sizes which are on average half the standard class size.

Case Study Profile
Dr. Rayner Browne Elementary School #25

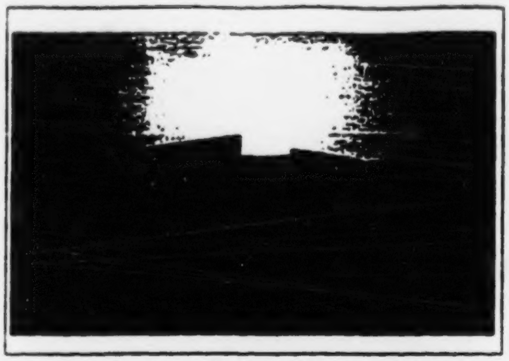

Figure 5.3 View of School #25 from Playfields

Building Description

Date Constructed: 1976
Gross Square Footage: 35,887
Floor Plan Layout: Open space classrooms
Building Systems: Masonry construction,
forced air heating and cooling system
Building GSF/Student: 103.1
F.M. Services: Private Company

Figure 5.4 Second Floor Pod 'A' in School #25

Program Description

Organization: Pre-K through 5th Grade
Student Population (95-96): 348
Student/Teacher Ratio
Kindergarten: 25:1
Grades 1-5: 24:1
Educational Admin.: Managed by Public/Private Partnership between 1993-1996
Educational Program: Tesseract Program, cooperative learning.

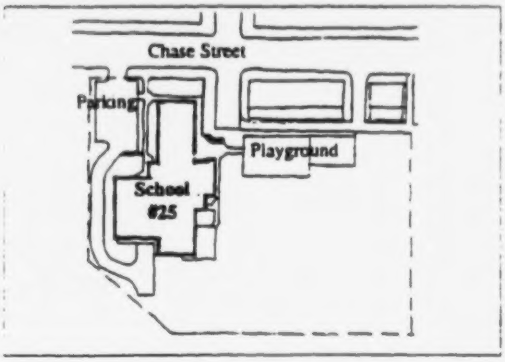

Figure 5.5 Site Plan: School #25

Narrative: Making Connections

Dr. Rayner Browne Elementary School, serving Pre-kindergarten through Fifth grade in the Madison-East End Neighborhood, is a school struggling to make meaningful connections with their surrounding community, in an effort to provide a safe environment for their students. In the view of Ms. Grafton, the principal of the school for the last four years, the goals of the school are: to improve performance, increase attendance, provide a safe environment for learning, and expand parent involvement. In her opinion, all of these goals are being adversely affected by the external influences of the surrounding community. For instance, families within the community are highly mobil, resulting in the school testing students they have not taught, or not testing the students they have. In terms of parental involvement, the principal insists, "We just can't get parents

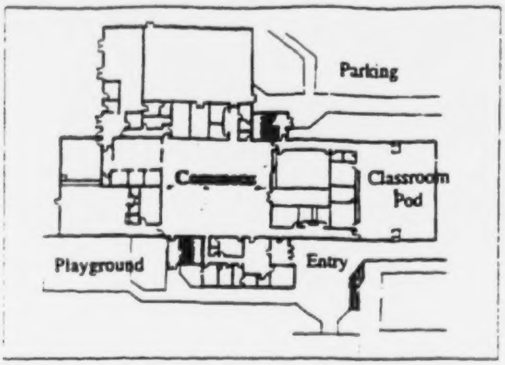

Figure 5.6 First Floor Plan: School #25

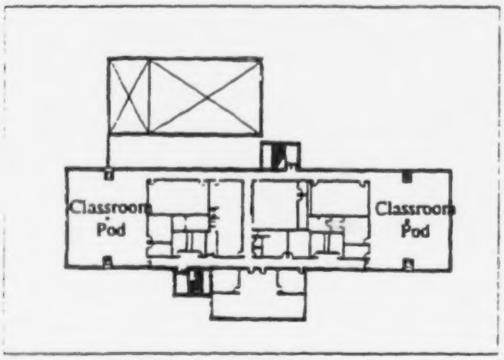

Figure 5.7 Second Floor Plan: School #25

Figure 5.8 View of the Commons from the Entrance Foyer in School #25

to get totally involved in our program and we have worked real hard at it." Ms. Clareson, the new parent liaison, had at the beginning of the year been able to attract only nine parent volunteers with two more joining later in the year — a number not nearly as many as is needed at the school. The lack of parental involvement in turn has an affect on student attendance which has been as low as 89%, a full five percentage points below their goal of 94%. Ms. Grafton states, "We have to work hard to get them to come to school... for some of them, we have to go door to door."

"Partnership" relationships with surrounding businesses are still rather minor. For example, the school is a partner with the manager of the "Pride" grocery store just west of their school: he provides, on occasion, treats for perfect attendance. As Ms. Grafton explains, "This is a community where most of the businesses are bars, so we use them as much as we can." The bar, adjacent to the east end of their school, has provided money for graduation exercises as well as other treats for students at the school. Recently, a new partnership has been formed with John Hopkins.

Dr. Rayner Browne Elementary School, a Pre K-5 school with a projected enrollment of 328 students, is located off of Chase Street one and a half miles northeast of the Central Business District and only a few blocks away from the John Hopkins Hospital complex on Monument Street. The two story brown brick school building is bounded by a residential Chase Street, a dead end to Montford Avenue, an alley to the north, Milton Avenue and residences to the east, a grass playing field and the B&O Railroad tracks to the south, and a "Pride" grocery store to the west that is sited off of Patterson Park Avenue. Across the streeet from the very pedestrian-active Chase Street are a series of brick rowhouses, a quarter of which have been abandoned or are in a severe state of disrepair. On the corner of Chase and Montford is Freddie's Steeplechase Bar, the bar that through the efforts of the prinicipal has become one of several burgeoning "partners" with Rayner Browne.

When asked about how well she feels the school has met their goals, Ms. Grafton summarizes, "I feel good about our efforts, but I don't feel good about our accomplishments in meeting those goals."

Case Study Profile
Coldstream Park Elementary School #31

Figure 5.9 Exterior View of School #31

Building Description

Date Constructed: 1979
Gross Square Footage: 79,642
Floor Plan Layout: Self-contained single
and double classroom pods
Building Systems: Masonry construction,
steam radiant heating and air-conditioning
systems.
Building GSF/Student: 138.0
F.M. Services: Public Agency

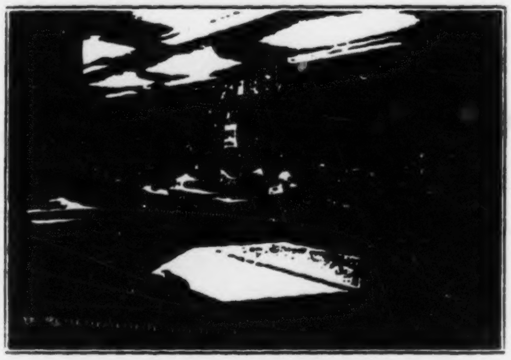

Figure 5.10 Typical Self-Contained Pod Classroom in School #31

Program Description

Organization: Pre-K through 5th Grade
Student Population (95-96): 577
Student/Teacher Ratio
Kindergarten: 24:1
Grades 1-5: 30:1
Educational Admin: Managed publicly by
B.C.P.S., site-base management.
Educational Program: Cooperative learning.
Dimensions of Learning philosophy.

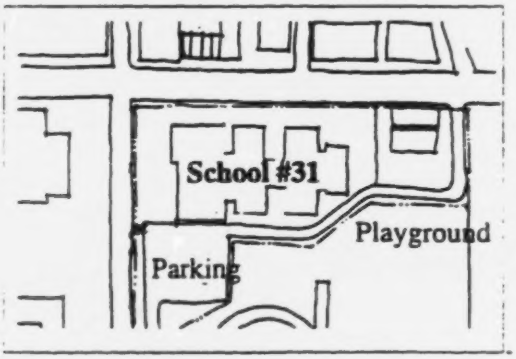

Figure 5.11 Site Plan: School #31

Narrative: A Capable School

"Capable" Coldstream Park Elementary School, constructed and occupied in 1979 serves parts of the Coldstream, Homestead and Montedello neighborhoods, northeast of the downtown business district by two miles, located just east of Greenmount Avenue (Route 45) on the corner of Exeter Hall Street and Loch Raven Road. The school is sited on the top of a hill it shares with an athletic stadium used by the popular "Baltimore Stallions," a semi-pro football team. Just north of the school is a fenced-in storage facility owned by the City of Baltimore.

Coldstream Park got its prefaced name "Capable" after the arrival of its new prinicipal Ms. Windsor, who has a reputation of poetically embellishing the names of the schools she has managed by adding an adjec-

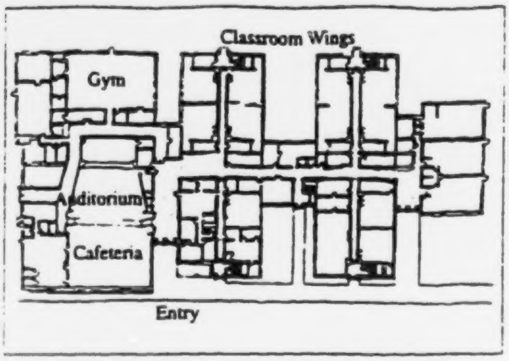

Figure 5.12 First Floor Plan: School #31

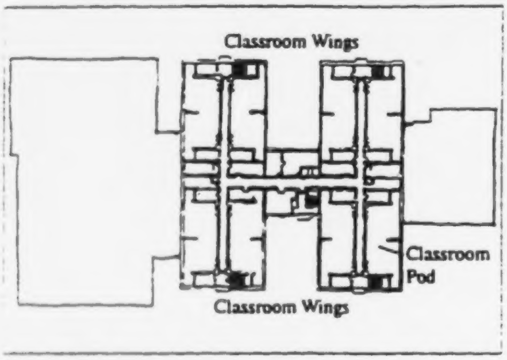

Figure 5.13 Second Floor Plan: School #31

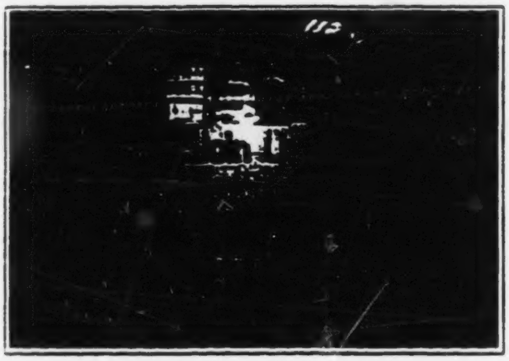

Figure 5.14 Wall Decorations by Students in the Main Lobby of School #31

tive to describe the character or personality of the school. Several names were voted on and "Capable" was the winner.

Although the school has had its problems with parental involvement, student achievement and student attendance, there are signs that some of these problems might be averted. Coldstream Park, like many schools in the Baltimore City Public Schools, has adopted a site-based management structure and employs a school improvement team that "allows key stakeholders the opportunity to collaborate on the mission, philosophy, goals, and strategies for improved management, teaching, and learning at the school" (Excerpt from school handbook).

One of the SIT's responsibilities is to develop a school improvement action plan. The most recent action plan calls for increasing parental involvement through a series of Parent Community Appreciation Events and instituting an adult basic education program among other activities.

Attendance has also been historically low, but the school is hopeful this will change this year. One particular event held in the school's auditorium in October, "Attendance Blast Off!" had an intended goal of promoting excellent attendance in every student

Organizationally, Coldstream Park is a Pre-K through Grade 5 structure with a current enrollment of 577 that has risen from 529 in the beginning of the year. Class sizes range anywhere from 17 in Kindergarten to as many as 37 in a two Third Grade classes. The school consists of 20 instructional teaching staff, 11 resource staff (with an additional 5 positions presently vacant), four administrative and clerical staff, two cafeteria staff and two custodial staff members. Coldstream Park has also been able to obtain a Parent Liaison who currently works with 7 parent volunteer aids.

The school practices cooperative learning and has implemented the strategies advocated in the Dimensions of Learning philosophy. Other instructional program offerings include Compensatory Education, Title I, Special Education, Writing to Read Lab and the STARS Science Program.

Case Study Profile
Mildred D. Monroe Elementary School #32

Figure 5.15 School #32 Street Entrance

Building Description

Date Constructed: 1971
Gross Square Footage: 47,828
Floor Plan Layout: Self-contained class rooms
Building Systems: Masonry construction, steam radiant heating system, air conditioning units in office, library and computer rooms only.
Building GSF/Student: 188.3
F.M. Services: Private Company

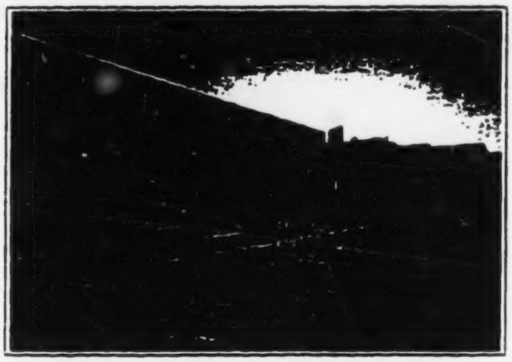
Figure 5.16 View of Playground and Back Entrance to School #32

Program Description

Organization: Pre-K through 5th Grade
Student Population (95-96): 232
Student/Teacher Ratio:
Kindergarten: 19:1
Grades 1-5: 27:1
Educational Admin.: Managed by Public/Private Partnership between 1993-1996
Educational Program: Tesseract Program, cooperative learning.

Narrative: Coping With Change

The present Mildred Monroe School was constructed and occupied in 1967, directly adjacent to the original Guilford Avenue School built in the 1890s which still stands and is now the headquarters of the Greenmount Improvement Association and Urban Services. In 1980, at the request of the community, the school's name was changed to Mildred D. Monroe Elementary School to honor the memory of their beloved and dedicated custodian, who served the school for many years.

Mildred Monroe Elementary School is located in the Greenmount West neighborhood, north of the Central Business District, about three quarters of a mile north on Guilford Avenue. The school is bounded by Guilford on the east, Landale Street to the north, Federal Street to the south and a city alley that borders a parking area to the west. Surrounding the Mildred

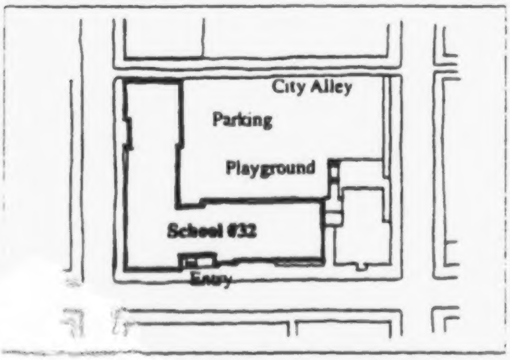

Figure 5.17 Site Plan: School #32

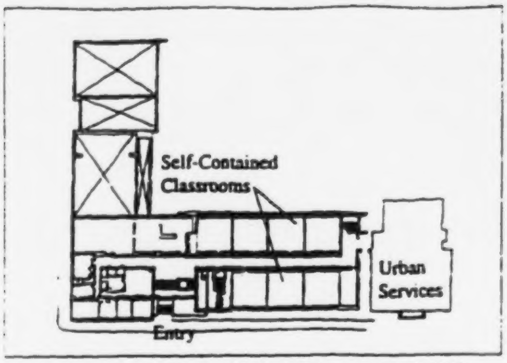

Figure 5.18 Ground Floor Plan: School #32

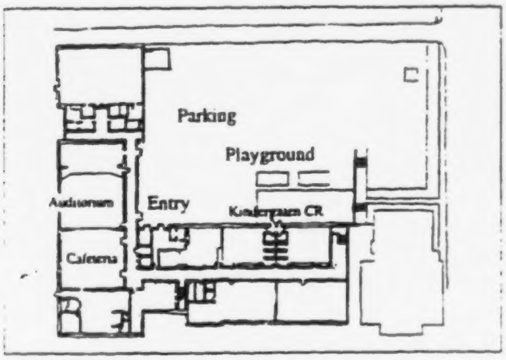

Figure 5.19 First Floor Plan: School #32

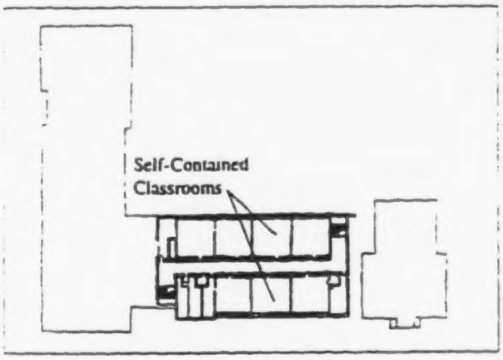

Figure 5.20 Second Floor Plan: School #32

Monroe school site are industrial buildings to the east and boarded up rowhouses to the north. To the west are rehabilitated and gentrified rowhouses that extend up and down the majority of Calvert Street, one of the main streets (Interstate Route 2) extending from the CBD one-way north (along with St. Paul one-way south) to the John Hopkins University Campus about one mile north. Though the Greenmount West neighborhood is considered one of the better neighborhoods with respect to crime and drugs it still has its share of urban problems.

Between 1992 and 1996, Mildred Monroe had been designated as a Tesseract school managed by a private educational management firm. The firm was the lead member of an Alliance, responsible for all instructional services; while a facility management company was responsible for all non-instructional support functions including custodial, maintenance, grounds, security, and administrative services; while an accounting firm responsible for managing the schools' fiscal operations; and computer comany was responsible for developing the computerized curriculum used by the educational management firm.

The enrollment at the school has been in a state of slow decline for the past few years. At the time the school was being built, the neighborhood had a growing population. Since that time, however, the neighborhood has continued to decline, in terms of school age children, due in part to the rising costs of living in an area that is in the process of regentrification. The neighborhood housing infrastructure has been gradually increasing in value as a result of extensive rowhouse revitalization efforts. According to the principal, the upper grade classes are full, but the lower grade classes are not filling up as rapidly.

Mildred Monroe began the year with an enrollment estimate of 271 students served by a staff of eight classroom teachers, a head teacher and a special education teacher, occupying a the total of nine classrooms in the building. By the middle of the school year, they were only serving 232 students, down 39 students from their projected enrollment for the year. Ms. Norman adds, "I could get another 100 children and I wouldn't fill this building."

The result of this mobility and slow decline in population in the immediate neigbhorhood is that the school's capacity is not being fully realized. Unlike many schools in the district, there is no shortage of space in this school.

Case Study Profile
Harriet Tubman Elementary School #138

Figure 5.21 Street View of School #138

Building Description

Date Constructed: 1979
Gross Square Footage: 44,805
Floor Plan Layout: Open space and self-contained classrooms
Building Systems: Masonry construction, forced air heating and cooling system.
Building GSF/Student: 106.7
F.M. Services: Public Agency

Figure 5.22 Interior Pod Classroom in School #138

Program Description

Organization: Pre-K through 5th Grade
Student Population (95-96): 420
Student/Teacher Ratio
- Kindergarten: 23:1
- Grades 1-5: 25:1

Educational Admin.: Managed by B.C.P.S., site-based management.
Educational Program: Cooperative learning.

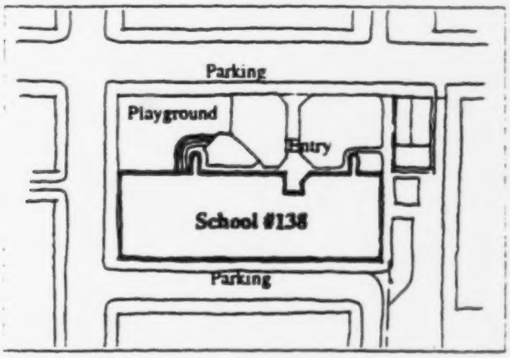

Figure 5.23 Site Plan: School #138

Narrative: Taking Ownership

Harriet Tubman Elementary School #138 is a Pre-K through 5 school, serving 450 students from the neighborhood with a total teaching staff and support staff of 45. The educational program emphasizes co-operative learning and is supported in that effort by the Success For All program run by John Hopkins University. The school practices strategies for age appropriate learning as well as advocating the Dimensions of Learning philosophy.

The school is located northeast of the central business district by approximately two miles and serves the Harlem Park Neighborhood a large African American community designated as an Empowerment Zone. Baltimore is only one of four cities to receive the designation by the federal government as an Empowerment Zone which entitles each of these select communities to $100 million in federal grants. Baltimore

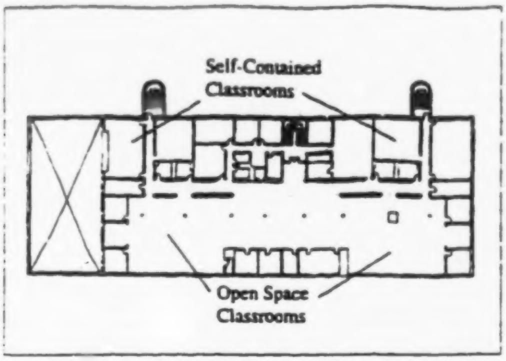

Figure 5.24 First Floor Plan: School #138

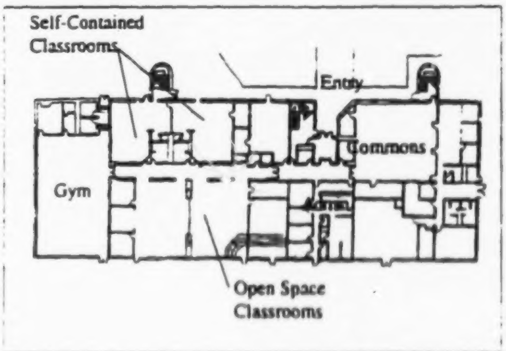

Figure 5.25 Second Floor Plan: School #138

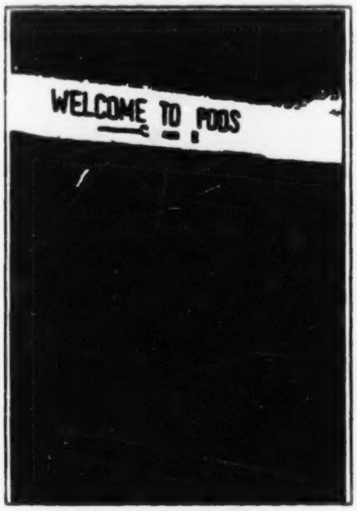

Figure 5.26 Second Floor Entrance to Open Plan Pods in School #138

has identified 112 initiatives intended to transform these neighborhoods.

Harriet Tubman is also part of the Baltimore City's Enterprise Schools Program, one of 34 public elementary, middle and high schools designated to be self-governing in the management of their financial resources, personnel, curriculum, educational policy and facilities. A School Improvement Team (SIT) has been formed in each of these schools to provide policy and management oversight, program assessment and mobilization of the community's participation.

Unfortunately, even with all of the positive support, Harriet Tubman currently finds itself struggling with problems of community and parent involvement, while simultaneously trying to increase already low achievement scores. As of February of 1996, the school, along with 34 other low performing schools, has been threatened by Reconstitution (the take over and restructuring of the school by the State of Maryland).

Overarching this challenge are the social problems in and around the Harlem Park neighborhood which, like many other Baltimore City Public Schools, have gotten worse over the past few years. Although many of these problems, literally outside school doors, have on rare occasions found their way in, the school has successfully maintained a highly-spirited atmosphere, and a positive and safe learning environment for children of the neighborhood.

The two story brick 44,800 square foot building that the school occupies on the corner of Harlem Avenue and Monroe Street is surrounded by early 1900's brick rowhouses, a quarter of them being boarded up and abandoned. Like many Baltimore City neighborhoods, this neighborhood is experiencing increasing mobility rates among its African American population. Many families in this community are in social and economic crisis.

Case Study Profile
Robert W. Coleman Elementary School #142

Figure 5.27 View of Main Entrance to School #142

Building Description

Date Constructed: 1980
Gross Square Footage: 40,223
Floor Plan Layout: Open space and self-contained classrooms
Building Systems: Masonry construction, forced-air heating and cooling system.
Building GSF/Student: 69.1
F.M. Services: Facility management privately outsourced between 1993-1996

Figure 5.28 Second Floor Open Plan Classrooms in School #142

Program Description

Organization: Pre-K through 5th Grade
Student Population (95-96): 582
Student/Teacher Ratio
  Kindergarten: 28.1
  Grades 1-5: 36:1
Educational Admin.: Managed by B.C.P.S., site-based management.
Educational Program:
  Cooperative learning, Dimensions of Learning

Narrative: The Dilemma

Robert W. Coleman Elementary School could be described as a progressive-minded school facing difficult but not insurmountable obstacles enroute to their bold vision of the future. Robert Coleman, under the leadership of its principal are in the process of implementing a vision of a community school that offers a one-stop shop interagency environment, one that reaches out to form partnerships with the community in order to more comprehensively serve the families within the community. The vision includes medical and dental care, religious services, family counciling, GED, and other programs. In essence, the school intends to become a complete community resource center.

As a first step Coleman, over the past year, implemented the Year-Round Education (YRE) Program,

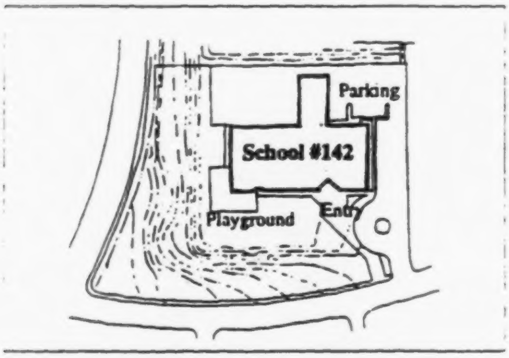

Figure 5.29 Site Plan: School #142

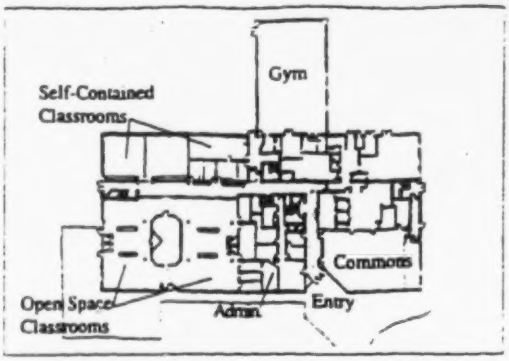

Figure 5.30 First Floor Plan: School #142

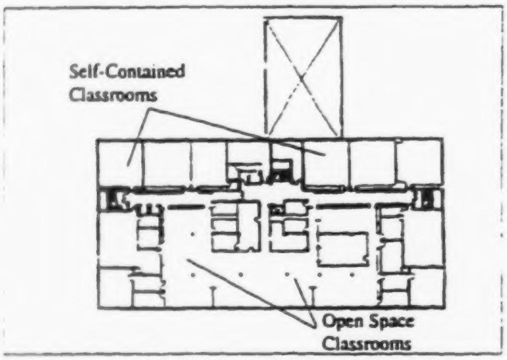

Figure 5.31 Second Floor Plan: School #142

Figure 5.32 Cafeteria at School #142

the first year-round school in the State of Maryland. YRE Program alternates on a 45/15 day cycle (effectively extending the school year by twenty days) of intersessions with the goal of "enhancing instructional delivery" by "offering curriculum and family options that more closely fit the changing work patterns and lifestyles" of the commuity.

Other activities and programs currently offered as a support an extension of traditional instruction include the contracting of Sylvan Learning Centers which works with at-risk students, a Parent Academy that provides parenting and nutrition workshops, and a YMCA day-care program.

Obstacles to this vision are many, but are being addressed by staff. The vision was found to be at odds with the realities of the physical facilities within which the programs are contained. The inefficiencies prevalent in these facilities has been born in part from a kind of "program-creep" created from interagency partnerships. The location of the Sylvan Learning Center is a self-contained classroom in the center of the second floor open space, and the assignment of self-contained classrooms to the YMCA and the Parent Academy serve as examples of this program creep in which prime instructional space has been allocated to accommodate the community school effort without any thought given to the implications imposed upon the instructional program. As a result, what is left is accreted and unworkable open plan instructional spaces that do not meet the instructional needs of students or teachers. Identifying specific problems and formulating strategies to successfully accomplish the vision within the realms of the existing building structure has become a major focus of this study.

Unfortunately, Coleman currently finds itself struggling to implement their vision, while simultaneously trying to increase already low achievement scores. As of February of 1996, the school, along with 34 other low performing schools, has been threatened by Reconstitition (the take over and restructuring of the school by the State of Maryland). This study served to support the efforts of Robert Coleman to formulate an Action Plan that includes the critical role of physical facilities in supporting the educational goals of the school. There is a strong perception among teachers, administrators and staff at Robert Coleman that environmental quality has an impact on the ability of students to learn and teachers to teach. These same teachers and administrators firmly believe that addressing the environmental quality concerns of Robert Coleman will go along way to improving student performance. Goal 1 of the five goals of the school

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CHAPTER 6

PLACES OF CONCERN: PERCEIVED ENVIRONMENTAL CONCERNS AND ENVIRONMENTAL QUALITY ATTRIBUTES

This chapter categorized and analyzed environmental concerns that emerged from observations, interviews, surveys and workshops with participants across all five schools in two ways. First, environmental concerns were categorized within a system of environmental quality attributes that were introduced to the working groups and other participants and used throughout the entire action research process. Second, environmental concerns were grouped by the places they were experienced. Seventeen specific place-types were identified that are located within and around the school building that were perceived by the working groups as being *places of concern*. The term 'place' as it is used here denotes a physical environment that has been given meaning through personal, group, and organizational process dimensions (Weisman, 1982) and which thus takes on affective and symbolic qualities (Altman and Low, 1992), while the term 'concern' refers to the environmental concerns the working groups identified in these places.

Attributes of Environmental Quality

As indicated in Chapter 2, environmental quality is difficult to define. Typically, there are layers of environmental qualities that we experience that interact and create within us an overall feeling of ease or discomfort. In this respect, this study refers to environmental quality as the less easily definable, and more variable, qualities of the built environment that provide satisfaction to people, its sensory quality in all modalities. Environmental quality cannot be pre-conceptually defined but rather, must be discovered: hypotheses about it can be made on the basis of previous experience and insight to be gained through the study of the values, attitudes, and definitions of different groups in the context of a time and culture. Previous research suggests that environmental quality is grounded on intimate knowledge of the ways people think and feel about environment. Environmental qualities represent or describe the resultant transactions between people and their physical, social and organizational environments.

The approach of this study was to investigate the whole setting (organizational, social and physical environments) with special emphasis on the functions of facility management. Environmental quality was defined through the action research process, beginning with researcher-defined attributes and ending with a subset of attributes modified by school occupants to fit their experience within the context of locally perceived environmental concerns.

As an outcome of the participatory action research process a set of environmental concerns were identified (See Appendix B: Environmental Quality Concerns for a complete description of the environmental concerns in each school). The number of environmental concerns in any one school ranged from 10 to 27, while the a subset of high priority issues in any one school ranged from 5 to 18.

Environmental concerns were categorized throughout the action research process in dialogue with working groups as belonging to a class of experientially distinguishable environmental quality attributes such as physical comfort and health concerns, safety and security concerns, classroom adaptability concerns, etc.

Environmental concerns were categorized by the researcher as associated with specific attributes of environmental quality forming *statements of association* (see Appendix C in Volume 2). All statements of association between environmental concerns expressed by the working groups and the attributes of environmental quality identified by the researcher were counted and ranked. The result is a list of the attributes of environmental quality most often associated with the environmental concerns mentioned by the working groups. These attributes of environmental quality were then ranked from the most to the least statements of association (again, see Appendix C). The top ranked attribute -- here Physical Comfort and Health -- represents the attribute of environmental quality that was the most often mentioned set of environmental concerns across all schools in the study, and as such, this list represents a ranking of aggregate data. (The ranking of environmental quality attributes will be slightly different depending on which school is being observed):

1. **Physical Comfort & Health** (PCH) refers to the degree to which occupants feel the indoor environment meets their physiological needs with respect to thermal and air quality, illumination, noise and odors. Specific issues related to physical comfort and health might include classrooms that are either too hot or too cold, inadequately circulated air, lighting quality, acoustic and noise issues and unpleasant odors. (Number of Statements of Association = 41)

2. **Classroom Adaptability** (CA) refers to the degree to which occupants feel that the physical classroom space can be adapted to different and desired educational activities and functions. Specific issues related to Classroom Adaptability might include the inability to accommodate different furniture arrangements, inadequate room for instructional needs, problems with book, supply, student and personal storage, not enough display space, structural obstructions, etc. (Number of Statements of Association = 36)

3. **Safety & Security** (S/S) refers to the degree to which occupants feel the school building contributes to protecting occupants from harm, injury, or undue risk. Specific issues related to safety might include slippery floors, unsafe playground equipment, emergency lighting, child safety in parking lots, while issues related to security might include poor outdoor lighting, unlawful entry of intruders, drugs, weapons, stolen items, or surveillance. (Number of Statements of Association = 34)

4. **Building Functionality** (BF) refers to the degree to which occupants feel the various places within the school building are functionally compatible with their school's educational programs and activities. Specific issues related to building functionality might include problems with conducting cooperative learning in open instructional space, adequacy of space size and configuration of classrooms, assembly spaces or other spaces within the school. (Number of Statements of Association = 28)

5. **Aesthetics & Appearance** (A/A) refers to the degree to which occupants feel the school building is attractive and provoking. Specific issues related to aesthetics & appearance might include the appearance and upkeep of the exterior of the building, the visual appearance of the building entrance and lobbies to visitors, cleanliness of floor, wall and ceiling surfaces, the orderliness and cleanliness of classrooms, etc. (Number of Statements of Association = 22)

6. **Personalization & Ownership** (P/O) refers to the degree to which occupants feel the school building offers opportunities to create a personal and self-expressive environment and engender a sense of ownership. Specific issues related to personalization and ownership might include student work displays, ability of individual students to personalize desks and work areas, personal lockers, personalization of classrooms by teachers, parental volunteerism, neighborhood residents respect school grounds, etc. (Number of Statements of Association = 18)

7. **Places for Social Interaction (Social Places)** (PSI) refers to the degree to which occupants feel that places within the school building provide opportunities for meaningful social exchange and interaction. Specific issues related to social places might include classrooms that do not provide opportunities for small group instruction, places in the school that promote informal social exchange such as a lobbies, hallways, restrooms, and playgrounds, etc. (Number of Statements of Association = 18)

8. **Privacy** (P) refers to the degree to which occupants feel that there are places within the school building which provide opportunities for an individual or a small group to be free from the intrusion of others. Specific issues related to privacy might include the availability of places to have private conversation, to be alone for a short moment to collect your thoughts, and/or places for students to be alone for a few minutes. (Number of Statements of Association = 15)

9.5 **Sensory Stimulation** (SS) refers to the degree to which occupants feel the school building provides a stimulating environment for learning that is safe yet challenging. Specific issues related to sensory stimulation might include brightness and cheerfulness of classrooms, hallways, assembly spaces, inspiring and creative wall displays, visually exciting learning spaces, a variety of textural changes and colors, etc. (Number of Statements of Association = 8)

9.5 **Crowding/Spaciousness** (C/S) refers to the degree to which occupants feel the school building cannot adequately accommodate the number of students and teaching staff occupying it. Specific issues related to crowding/spaciousness might include problems with overcrowding in classrooms, congested hallways, lobbies, administrative offices and other spaces in the school building (Number of Statements of Association = 8)

Chapter 7 will present the findings from the top five environmental quality attributes in more detail. Please note, again, that the ranking of environmental quality attributes was slightly different between schools, and can be expected to be different in other schools and school districts. For example: Physical Comfort and Health was the top ranked attribute in three schools, while being ranked second in one, and third in another; Classroom Adaptability was ranked first in two schools, second in one school, and third and fourth in the two remaining schools; finally, Safety and Security was ranked first in one school, while being ranked second in two, as well as third and fifth in the two remaining schools. This aggregate ranking can only be seen as an exercise in an attempt to generalize from the local context; a legitimate goal of action research. However, much more data will need to be collected before firm generalizations can be made concerning the nature of environmental quality across all schools.

Places of Concern

Defining environmental quality by place is a second way of analyzing the data. Although some places of concern were mentioned by all schools, not all schools mentioned the same ones (See Table 6.1). The list of places described and analyzed in this chapter can be considered the master list of potential place-types *for this study*. There may be many more place-types of varying scales in the school that have not been of concern to participants. Each place-type is presented by the most cogent examples that provide a summary of perceived environmental concerns and an analysis of the physical components of place. Simultaneously, place experience has been analyzed according to which attributes of environmental quality were perceived to be of concern in the experience, whether it is safety and security, building functionality, aesthetics and appearance or some other attribute. In some cases, place experience described by participants may entail only one or two attributes of environmental quality, while other places of concern bring into play many more attributes. Table 6.2 indicates the attributes of environmental quality that played a role in the experience of participants in each of the seventeen places of concern (in parentheses note theschool within which the' place' can be found, and the priority and specific numbered 'concern' which can be found in under that school in Appendix B in Volume 2).

Table 6.1
Tabulation of Perceived Environmental Concerns by Place and School Case

Places of Concern	**School Cases**				
Exterior Places	#25	#31	#32	#138	#142
1. The School Grounds/Neighborhood Boundary	√	√	√	√	√
2. The Parking Lot	√	√	√	√	√
3. The Playground	√	√	√	√	√
4. The Main Entrance		√	√		√
Interior Places					
5. The Main Lobby		√		√	√
6. The Corridor			√		√
7. The Stairwell		√	√	√	√
8. The Bathroom			√	√	√
9. The Classroom (Open)	√	√		√	√
10. The Classroom (Contained)			√		
11. The Assembly Space					√
12. The Library/Media Center					√
13. The Teachers' Lounge		√	√		√
14. The Cafeteria		√			√
15. The Administrative Offices					√
16. The Teacher's Desk & Storage	√				√
17. The Student Locker			√	√	√

Table 6.2
Tabulation of Perceived Environmental Concerns by Place and Attributes of Environmental Quality

Places of Concern	**Attributes of Environmental Quality**									
	PCH	CA	S/S	BF	A/A	P/O	PSI	P	SS	C/S
Exterior Places										
1. The School Grounds/ Neighborhood Boundary			√		√	√	√			
2. The Parking Lot			√							
3. The Playground			√	√	√	√	√			
4. The Main Entrance			√	√						√
Interior Places										
5. The Main Lobby	√		√	√	√		√			√
6. The Corridor	√				√		√		√	
7. The Stairwell			√	√			√			√
8. The Bathroom	√						√			
9. The Classroom (Open)	√	√		√	√		√	√		√
10. The Classroom (Contained)	√	√			√	√		√		√
11. The Assembly Space	√	√		√	√				√	√
12. The Library/Media Center		√		√						
13. The Teachers' Lounge	√			√	√	√	√			
14. The Cafeteria	√	√		√						
15. The Administrative Offices	√			√				√		√
16. The Teacher's Desk & Storage		√	√		√			√		
17. The Student Locker						√		√		

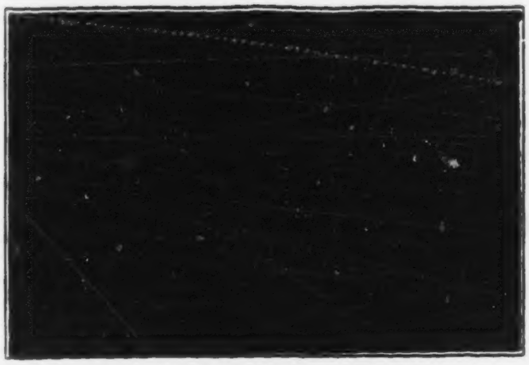
Attributes of Environmental Quality (Key)

PCH	Physical Comfort and Health	P/O	Personalization & Ownership
CA	Classroom Adaptability	PSI	Places for Social Interaction
S/S	Safety & Security	P	Privacy
BF	Building Functionality	SS	Sensory Stimulation
A/A	Aesthetics & Appearance	C/S	Crowding/Spaciousness

[See Chapter 7 for project environmental quality attribute definitions]

Figure 6.1a The School Grounds/Neighborhood Boundary

(School #25 - High Priority Concern #4)

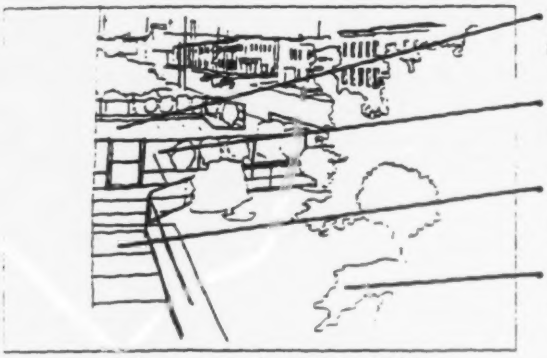


View from entrance to School #25

Perceived Environmental Concerns

The working group felt that the overall quality of the neighborhood exerts an overall negative affect on all activities within and around the school. Teachers fear for student **safety**, and several drug related incidents in the surrounding neighborhood during school hours have reminded them of the need to be vigilant. Crime has seemingly gotten worse around the school — there are more shootings and strangers are found walking through the parking lot and around the school entrance during the day. There is a general lack of **ownership** of the school grounds by many of the surrounding neighborhood residents. The **appearance** of the neighborhood adds to a feeling of **insecurity** on the part of teachers. Using the school grounds as a **place for social activities** is kept to a minimum for purposes of safety. Overarching all these concerns, teachers feel that neighborhood quality contributes to the problems and frustrations they see children bringing into the school.

Analysis of the Components of Place



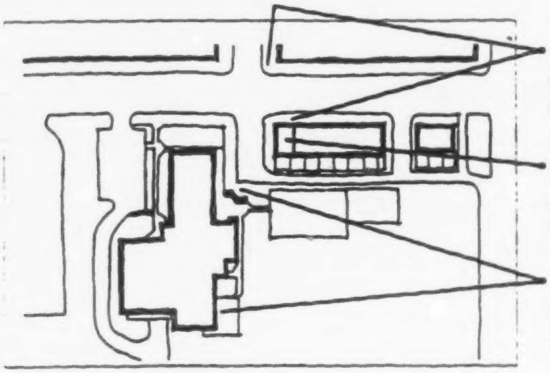
Path to parking lot at School #25

Poor outdoor lighting for walkway to the parking lot and parking lot generally (S/S)

Parking lot fencing has not been a deterant to trespassing (S/S)

Pathway to the parking lot perceived to be dark and unsupervisable (S/S)

Fenced in grass area perceived to be a place for strangers to hide (S/S)



Site plan of School #25

Open-air drug dealing across and along the street seen as potentially dangerous influence on students (S/S)

The presence of a bar at the edge of the school grounds not seen as the most appropriate business (A/A, S/S)

The school building and grounds are routinely violated by graffitti, broken bottles, drug needles and trash which limits school use (A/A, S/S, PSI, P/O)

Figure 6.1b The School Grounds/Neighborhood Boundary

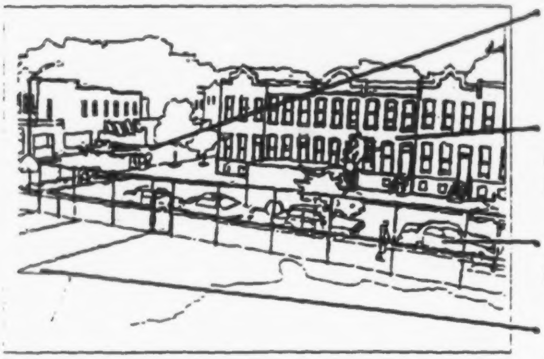
(School #138 - High Priority Concerns #6 and #7)

Perceived Environmental Concerns

All occupants in the school are aware of the **appearance** of the exterior ground of the school: glass, uncut grass, damaged fencing, peeling paint on of stair towers, graffiti, and slow trash pick-up. The disrepair of the playground equipment was seen as being both **unsafe** and unsightly in appearance as well. Much of these problems are associated with the perceived lack of neighborhood **ownership** of the school grounds. Open-air drug dealing across the street and on the school playground at night, and car break-ins and thefts further limits the psychological safety teachers have on school grounds.

Neighborhood view from school grounds at School #138

Analysis of the Components of Place



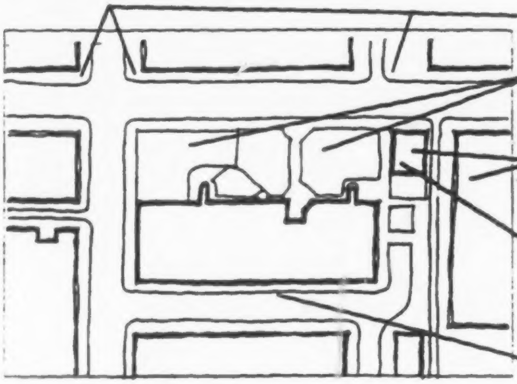
Sketch of neighborhood view from school grounds at School #138

Open-air drug dealing a constant concern of the neighborhood and the subject of police raids in the neighborhood over the past year (S/S)

Abandoned and boarded up row hosues indicate a economically depressed neighborhood (S/S, A/A, P/O)

Auto theft and break-ins are a regular occurance (S/S)

Basketball court continuously trashed by residents of the neighborhood (S/S, A/A, P/O)



Site plan of School #138

Open-air drug dealing (S/S)

Custodians unable to keep building grounds clean of glass, drug needles, and garbage (S/S, A/A, P/O)

Abaondoned buildings the cause of concern for drug houses and fires (S/S, A/A, P/O)

Recent fire in this house left debri on school grounds for several weeks before it was cleaned up by the city (S/S, A/A)

Auto theft and break-ins are a regular occurance behind the school where there is no direct supervision (S/S)

Figure 6.2 The Parking Lot

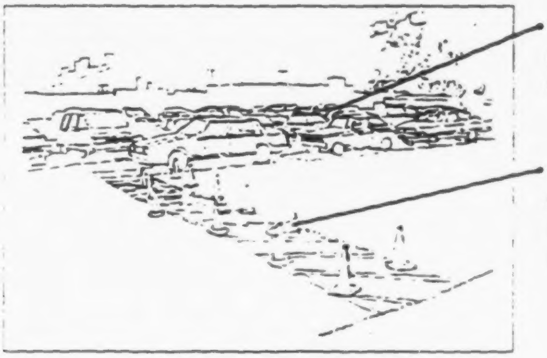
(School #31 - High Priority Concerns #3 and #4)

Parking lot at School #31

Perceived Environmental Concerns

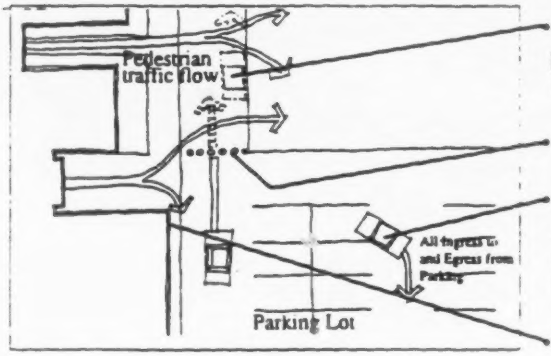
Parents and visitors attempt to park along and drive fast through the drive access in front of the building entrances, causing potential cross traffic **safety** problems with exiting students. The problem has been resolved temporarily during final dismissal through the use of student crossing guards and orange cone markers, but parents still routinely disregard these signs, increasing the potential for accidents. Parking lot **safety** is a continuing concern for teachers. Staff cars are regularly broken into. The existing camera is not functioning and a lack of adequate lighting exists on both sides of the building.

Analysis of the Components of Place



Sketch of cross-traffic conflict

- The parking lot becomes very congested by the end of the school day and traffic is difficult to control (S/S)
- Student safety guards (or "safeties") place orange cones along pedestrian paths to keep autos from crossing. Note knocked down cones from previous auto incursions into the egress lane (S/S)



Cross-traffic conflict plan

- Egressing auto traffic is in direct conflict with pedestrian traffic during morning and dismissal hours (S/S).
- Student safety guard orange cone placing (S/S)
- The site is designed for ingress at the south end of the school site and egress at the north end. Blocking the north end auto egress has caused further problems of parking congestion (S/S).
- Poor lighting (S/S)

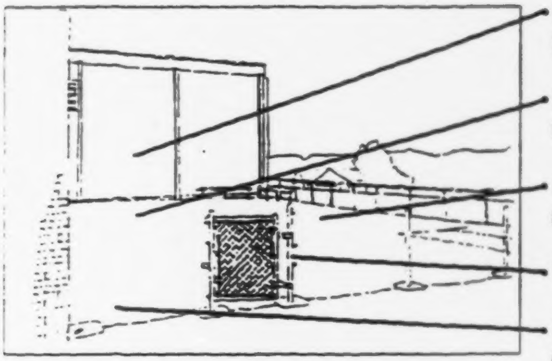
Figure 6.3a The Playground
(School #31 - High Priority Concern #2)

The playground at School #31

Perceived Environmental Concerns

Due to the perceptions of teachers that the kindercourt playground is an **unsafe** outdoor area, it has not been used as a **place for social interaction** other than for semi-annual cook-outs where the entire school is present. Drug paraphernalia and broken glass is found routinely by custodians in both the playground area and the surrounding grass play areas creating safety problems for outdoor play. The **functionality** of the building does not allow for direct visibility of the playground from within the school. The **aesthetics and appearance** of the playground has suffered from broken equipment, and from damaged and stolen fencing. All these problems indicate to the school the lack of **ownership** the neighborhood has taken in the school grounds.

Analysis of the Components of Place



No visual supervision possible from classrooms (S/S)

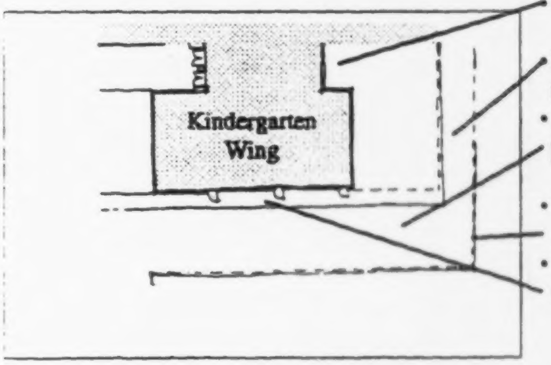
Playground abandoned as a place for outdoor play (PSI)

Drug paraphernalia, broken glass and trash found routinely (S/S, A/A, P/O)

Fencing stolen (A/A, P/O)

Playground surfaces cracked and not maintained (A/A)

Sketch of what remains of the playground at School #31



Unsupervisable building pocket (S/S, BF)

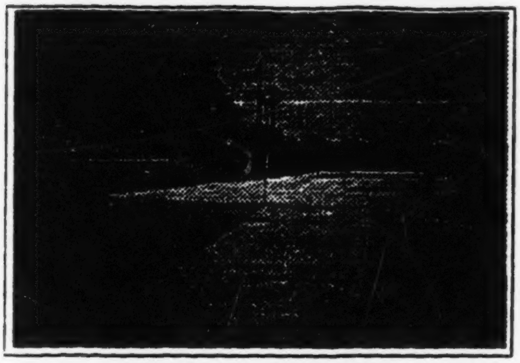
Due to shortage of staffing, the building grounds are not maintained as desired by occupants (A/A)

- Grass playareas filled with various trash and drug paraphernalia (S/S)
- Trash has collected against fencing (A/A)
- Playground not directly and visually adjacent to kindergarten classrooms (S/S, BF)

Plan of playground at Kindergarten Wing

Figure 6.3b The Playground

(School #25 - High Priority Concern #3)

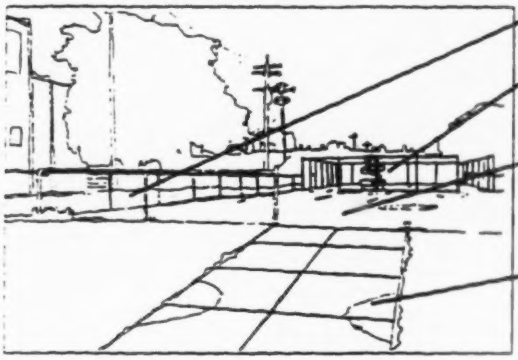


Playground at School #25

Perceived Environmental Concerns

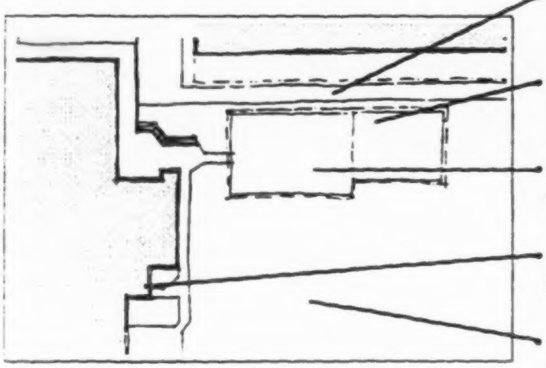
Although teachers and staff felt that the custodians do an excellent job of keeping the **appearance** of the grounds in good order, glass and needles are still found in the grass and on the playground by students causing **safety** concerns. Graffitti detracting from the appearance of the school, is routinely cleaned off the concrete surfaces of the playground and school building near the tot lot. The basketball hoops, once a lively **place for social interaction** between neighborhood residents, along with the remains of the steel monkey bars were recently removed to discourage use of the grounds by those residents of the neighborhood who have not taken appropriate **ownership** of the school grounds.

Analysis of the Components of Place



- City alley an "eye sore" for school occupants (A/A)
- Playground equipment damanged and not develop mentally appropriate (S/S, A/A, SS)
- Basketball hoops removed to discourage use of play ground by neighborhood residents (S/S, PSI, A/A, P/O)
- Walkway to playground in disrepair (A/A)

Sketch of playground at School #25

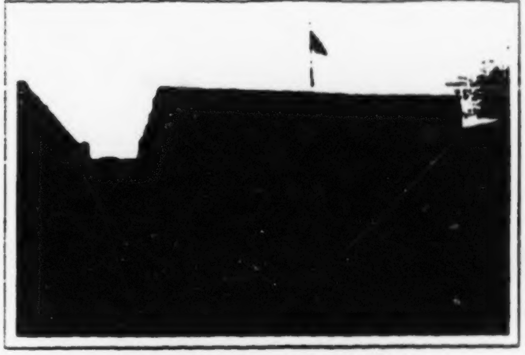


- Custodians cleaned up alley "eye sore" making an impression on surrounding residents (A/A, P/O)
- Glass and needles found regularly on the edges of the playground and playfields (S/S)
- Basketball court now an open black-topped surface with no particular use (S/S, PSI, A/A, P/O)
- Graffitti regularly found on building near tot lot (A/A, P/O)
- Playfields used with caution by teachers who fear unpredicable behavior by some residents in the neighborhood during school hours (S/S, PSI)

Site plan of playground areas at School #25

Figure 6.4 The Main Entrance

(School #31 - High Priority Concern #1)

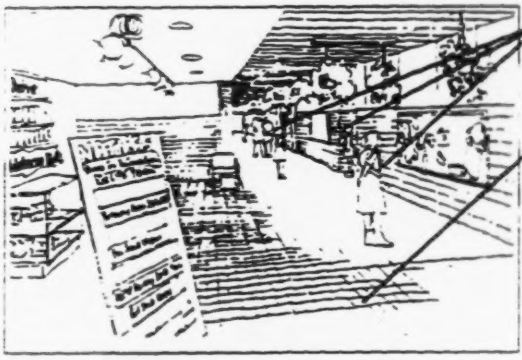


Main entrance at School #31

Perceived Environmental Concerns

Although multiple points of entry have a positive impact on reducing **crowded** bottlenecks at the main entry and lobby, it also poses a **security** problem in that more entrances must be monitored for intruders. Most of the concern over intruders comes from teachers in the Kindercourt Wing designed with an independently **functioning** main entrance but with no supervisory control. The doors of the wing are often propped open due in part to people not completely closing the doors and also to improperly functioning door closers. In addition, although the main entry has been unlocked and welcoming for visitors, recently a buzzer system had to be installed like many other schools in BCPS due to a series of recent daytime intruder incidents including one incident in which A/V equipment had been taken from a classroom.

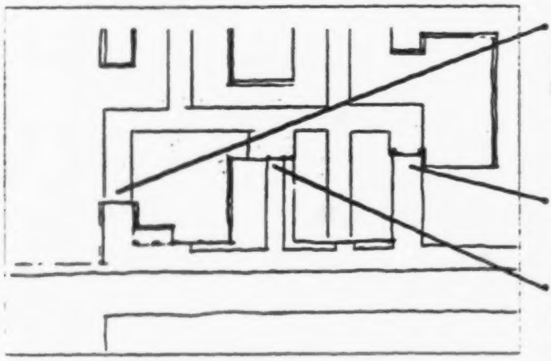
Analysis of the Components of Place



Exiting strategies at School #31

Crowding diminished greatly in corridors through the use of crossing guards at each interior corridor intersections (C/S. BF)

Main lobby congestion mitigated by school policy of dividing student body into first and second floor classroom groupings (C/S. BF)



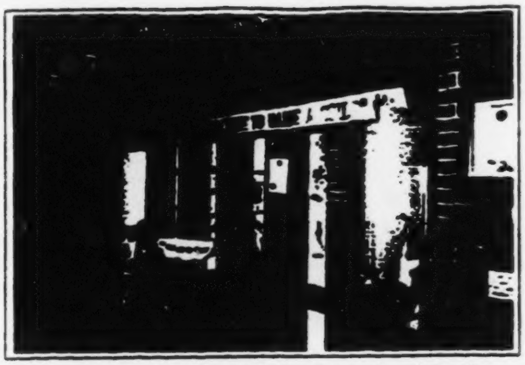
Site plan of School #31

Main lobby doors only recently provided a locked buzzer system to cut down on intruders who routinely walk past the main office on to classrooms (S/S)

Entry to the kindergarten wing remote and difficult to monitor throughout the school day (S/S. BF)

Entry to main stairs to the second floor openned only during morning arrival and afternoon dismissal (S/S. BF)

Figure 6.5 The Main Lobby
(School #142 - High Priority Concern #5)

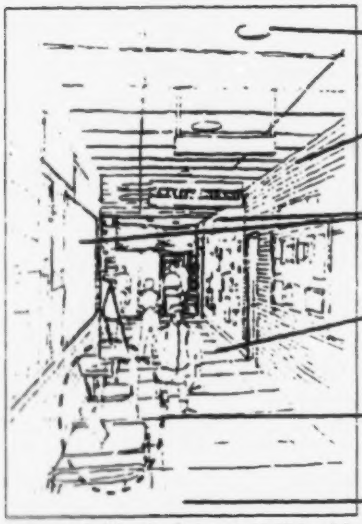


Main lobby of School #142 with a view into the Commons

Perceived Environmental Concerns

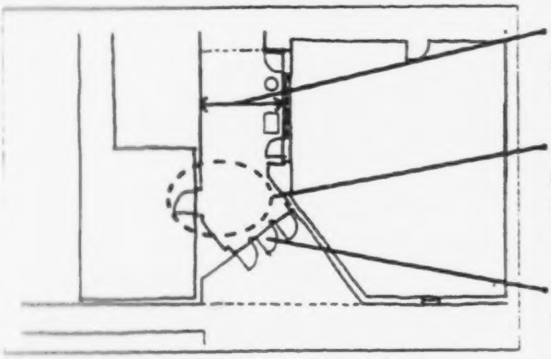
The main lobby becomes a **crowded** bottleneck due to the confluence of occupant traffic to and from the administrative offices and Commons at several periods during the day. The lobby lighting is insufficient for visual **comfort** due to low-wattage incandescent track-lighting fixtures and dark unreflective brick wall surfaces. Due to **security** problems with intruders, a locked buzzer system has been installed which creates a great deal of auditory discomfort throughout morning arrival and dismissal. In further response to the intruder concerns, the custodian sits at the end of the corridor looking out for strangers while using the opportunity to **socialize** with teachers and students as they enter and exit the building.

Analysis of the Components of Place



Sketch of main lobby in School #142 looking back at the main entrance

- Poor incandescent lighting (PCH)
- Dark brick surfaces while providing a sense of warmth, also contribute to the visually dark lobby (PCH, A/A)
- White bulletinboards mitigate lighting reflectance somewhat (PCH, A/A)
- Eight-foot corridor not wide enough to accommodate occupant traffic through lobby and onto class room spaces (C/S, BF)
- Seating in lobby creates a further traffic bottleneck (C/S)
- Location of custodian who greets all who enter the school while watching for strangers entering the school (S/S, PSI)



Plan of main lobby in School #142

- Narrow lobby (10 Feet) is made narrower still by the inclusion of plants and free-standing informational displays (C/S)
- Although it can become very congested at door to administrative offices, the spatial tightness creates a sense of congeniality between occupants and visitors (C/S, PSI)
- Buzzer system at the door creates considerable noise throughout the day (PCH, S/S)

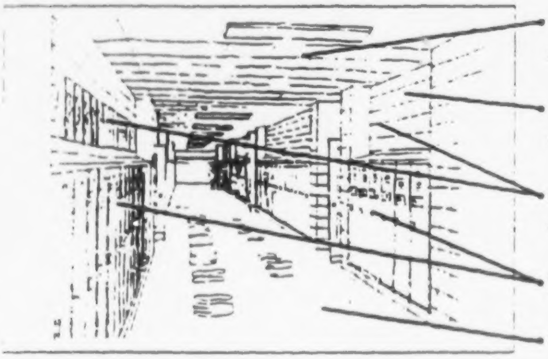
Figure 6.6 The Corridor
(School #32 - Low Priority Concern #13)

Perceived Environmental Concerns

The noise in the corridors on both the first and second floors is perceived as being beyond the normal **comfort** level causing numerous auditory distractions within the classroom throughout the day. Teachers have acknowledged that the noise is not all the students' fault. It is suspected that the noise problem is partly a result of the reverberations of students' voices against the hard surfaces in the corridors (i.e., tile, concrete and metal lockers). As a result of the noise factor, corridors are used for little more than transit from their self-contained classrooms to the cafeteria. The barren institutional **appearance** of corridors is further hindered by the lack of adequate **sensory stimulation** with student work being displayed on the walls high above the lockers.

Typical corridor in School #32

Analysis of the Components of Place



Concrete block veneer ceiling contributes to noise reverberation in corridors throughout school (PCH)

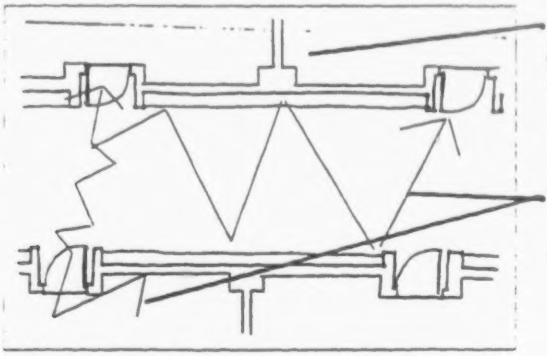
Painted concrete block walls contribute to noise reverberation (PCH)

Corridor walls have a limited amount of student work displayed (SS, A/A)

Metal lockers contribute to noise reverberation (PCH)

Vinyl asbestos tile contribute to noise reverberation as well (PCH)

Sketch of typical corridor in School#32



Due to school policy concerning noise, self-contained classroom teaching, and a declining student body the corridors are empty most of the school day (PSI)

Noise from adjacent classrooms travels down corridors to distrupt other classrooms down the hall (PCH)

Typical corridor plan in School #32

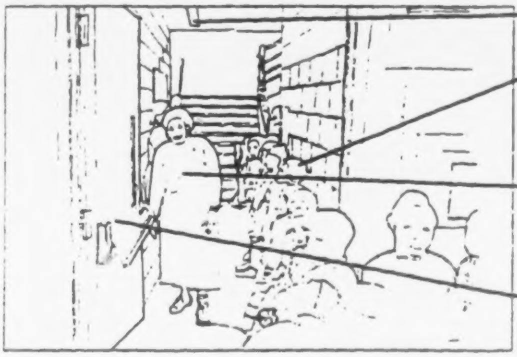
Figure 6.7 The Stairwell
(School #138 - High Priority Concern #3)

Perceived Environmental Concerns

There is often congestion and **crowding** as students enter the main lobby stair during the morning and at dismissal. The crowdedness provides opportunities for informal **social interaction** between students, parents and teachers at the beginning and ending of each school day. The school has developed an exiting strategy to proactively respond to a potential fire **safety** problem. A single-leafed door leading out from the stair to the main corridor contributes to the sense of crowding. In addition, the visual **comfort** level of lighting illumination in the stair tower is perceived as being insufficient.

Ingress to main stairs at School #138

Analysis of the Components of Place



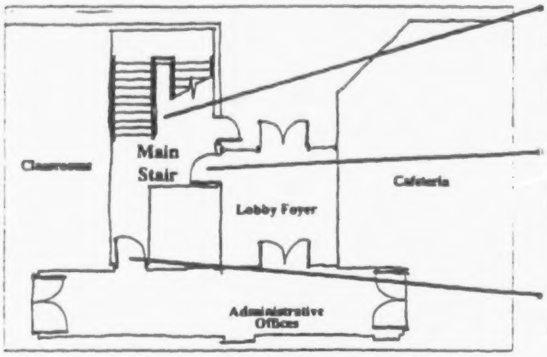
Sketch of ingress to main stairs at School #138

Lighting illumination not sufficient (PCH)

Congestion and crowding of students at the foot of the stairs who must wait in line to be escorted to their respective home rooms on the second floor (C/S)

The crowdedness of the main lobby and stair afford opportunities for social interactions between students, teachers and parents (PSI).

Single-leaf door adds to bottleneck in stairwell (C/S, BF)



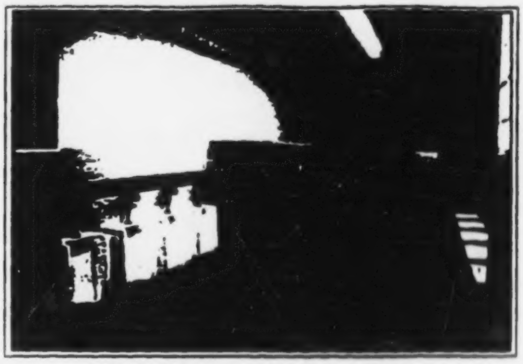
Floor plan of main entrance, lobby and stairwell

Main stairs used throughout the day for all traffic from the second floor while the two stair towers on either end of the building are not used due to problems with intruders (S/S, BF)

Door from lobby foyer to main stair allows access to the building without supervision from the administrative offices (S/S, BF)

Single door egress from stairs functionally problematic during exiting (S/S, BF)

Figure 6.8 The Bathroom
(School #32 - Low Priority Concern #13)

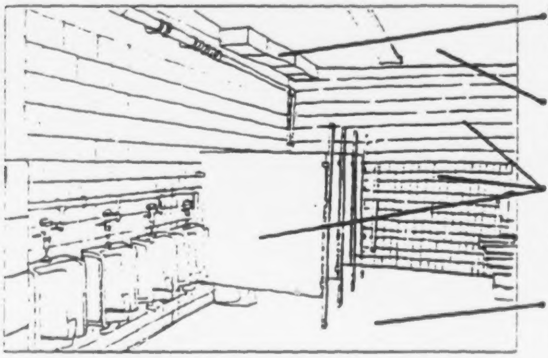


Typical bathroom at School #32

Perceived Environmental Concerns

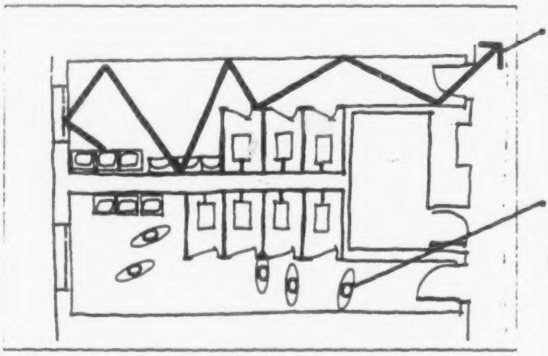
The noise in the bathrooms on both the first and second floors is perceived as contributing to auditory **discomfort** in adjacent classrooms. Teachers have acknowledged that the noise is not all the students' fault. It is suspected that the noise problem is partly a result of the reverberations of students' voices against the hard surfaces in the bathroom and in the building in general (tile, concrete and metal lockers). As a result of poor acoustics in the bathrooms, students are sent in groups of four or five to limit the potential for noise and **socializing** that leads to additional noise. Bathrooms also lack proper ventilation and odors can be a problem.

Analysis of the Components of Place



Sketch of typical bathroom at School #32

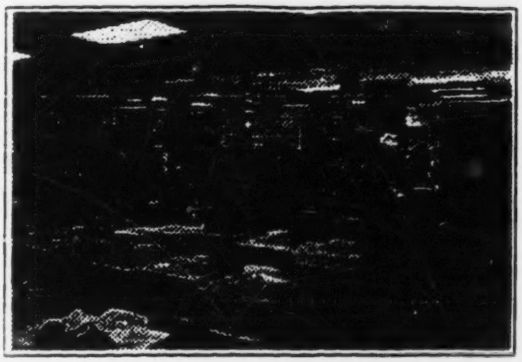
- Problems with odor due to poor ventilation system (PCH)
- Concrete block veneer ceiling contributes to noise reverberation (PCH)
- Painted concrete block and tile walls and metal toliet partitions further contribute to noise reverberation (PCH)
- Vinyl asbestos tile contributes to noise reverbera tion (PCH)



Floor plan of typical bathrooms at School #32

- Reverations from floor, wall, ceiling, and metal sur faces within the bathroom spill out into the corridor and into adjacent classrooms (PCH)
- Due to noise problem, students are sent to the bath room in groups of four or five to limit the potential for noise and **socializing** that leads to additional noise (PCH, PSI)

Figure 6.9a The Open Space Classroom
(School #138 - High Priority Concerns #1 and #8)

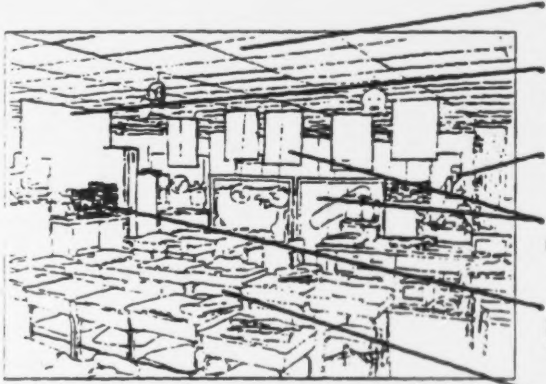


Second floor open classroom Pod 'C' in School #138

Perceived Environmental Concerns

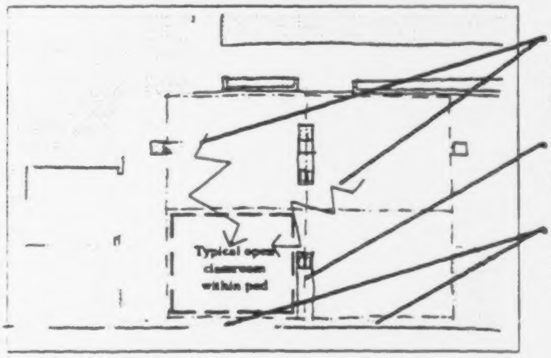
While teachers admit open space promotes informal **social** contact and collegiality among teachers, noise and auditory and visual distractions and **discomfort** continue even with the recent introduction of new portable bulletin boards. Classrooms have limited **adaptability** to teacher needs. There is no wall space so teachers must hang posters from the ceiling, there is also inadequate chalkboard space, and no locked cabinet storage in the classroom for instructional materials or **private** personal belongings. Several open space pods have continual problems with **thermal comfort** year-round: heating in the winter, and too cold in the spring and fall months. Teachers have limited perceived control over temperature fluctuations in the open space classroom areas.

Analysis of the Components of Place



Sketch of second floor open classroom in Pod 'C' at School #138

- Forced-air mechanical system unable to heat and cool to satisfaction of occupants (PCH)
- Full-height partitions purchased for some teachers providing additional vertical display space (CA, PCH)
- Visual and acoustic distractions from adjoining class (PCH)
- Half-height partitions do not provide enough vertical display space so teachers hang additional displays from the acoustical ceiling tile grid (CA)
- Lack of storage in classroom leads to the stacking of books and supplies on existing cabinets originally intended as work surfaces (CA, A/A)
- Row and column desks are packed in to open space classroom leaving no room for activity centers



Second floor open classroom Pod 'C' plan in School #138

- Although well-defined as classroom spaces, visual and acoustic distractions from adjoining classes persist (PCH)
- Insufficient cabinet storage space near classroom (CA)
- Windows normally locked. Teachers do not have access to windows for ventilation without custodial assistance (PCH)

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Figure 6.9b The Open Space Classroom

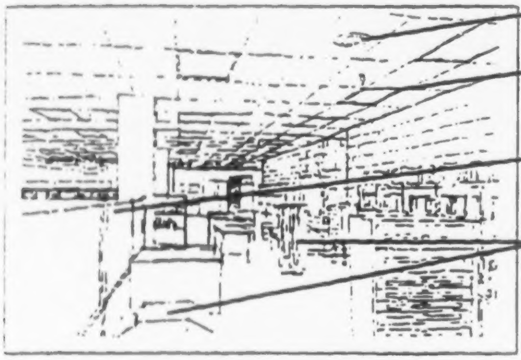
(School #142 - High Priority Concerns #2,4,13)

A second floor open plan classroom in School #142

Perceived Environmental Concerns

Most teachers are using traditional educational teaching styles appropriate in self-contained classrooms. in open space classrooms which are most appropriate to team teaching and group work. The disordered open plan configuration of the school has contributed to endless visual and acoustic distractions from other classes and from constant traffic flow. as well as problems of **privacy**. The arrangement of instructional areas has been compromised further by a number of column obstructions that severely limit **classroom adaptability**. In addition, classrooms are **overcrowded** and cannot accommodate learning centers. and windows do not open to provide fresh air, ventilation, and overall thermal **comfort**.

Analysis of the Components of Place



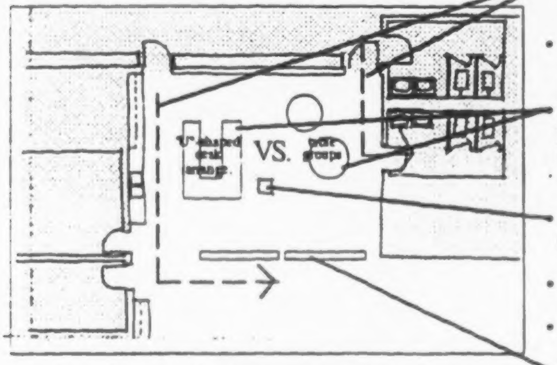
Sketch of the second floor open plan space in School #142

Zones of poor heating and cooling (PCH, BF)

Lighting grid not correspondent to learning areas creating dark and light areas in classrooms (PCH)

Arrangement of open classroom areas compromised by poor building layout (BF)

Disorderly, chaotic, unorganized classroom storage (CA)



A plan of one teacher's open space plan classroom in School #142

Visual distractions from class movement past class room (PCH)

- Crowded classroom leaves no room for activity centers (C/S, CA)

Replacement of "U"-shaped tables and teacher-talk pedagogy with circular tables and cooperative learning instruction during study improved student time-on-task (CA, PSI)

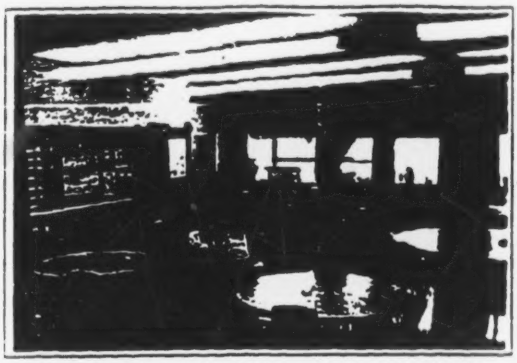
Column obstruction limits desk/table arrangements (CA)

- Poor temperature regulation of A/C and heat (PCH)
- No windows for desired ventilation (PCH)

Partitions recently acquired improved sense of enclosure to classroom, provided wall space for computer workstations and reduced some visual distractions (P, CA)

Figure 6.10 The Self-Contained Classroom

(School #32 - High Priority Concerns #1, 6, 7, 8, 10, 11, 12, 22)

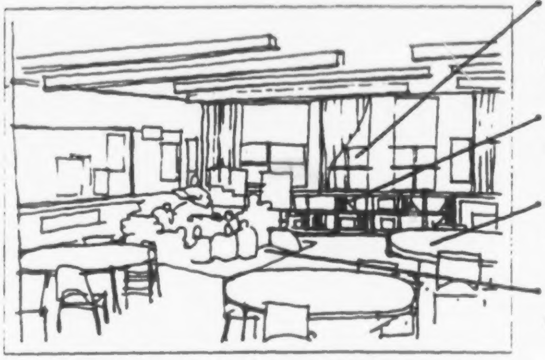


Typical self-contained classroom in School #32

Perceived Environmental Concerns

Classrooms can be very hot, humid from late April continuing until September. During test taking periods at the end of the year some classes are moved to more **comfortable** rooms. Tables, provided as a component of the cooperative learning educational program, are felt to be **unadaptable** in the self-contained classrooms taking up valuable space, do not provide enough configurational options and are tight for the number of students and materials at each table. In addition, students do not always get the personal space and **privacy** they need, and as a result, several fights occur each week. Students have few options for **personalizing** their space, must share lockers with other students, while materials and supplies are stored in shoe boxes and placed in the corner of the room.

Analysis of the Components of Place



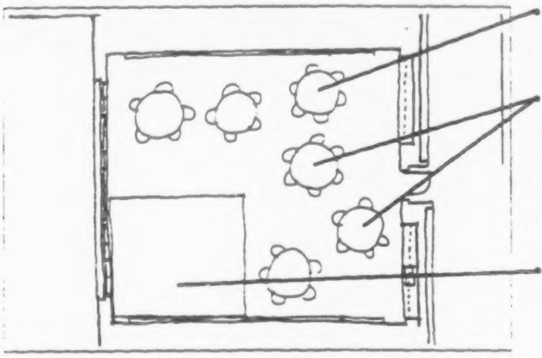
Weathered plexiglass windows do not provide clear views out and contribure glare in the afternoons (PCH, A/A)

Student work is stored in shoe boxes at the edge of the classroom (CA, P/O)

Table groups take up space for potential activity centers (CA)

Carpet is not as clean as it could be and looks old (PCH, A/A)

Sketch of typical self-contained classrom in School #32



Tables take up room for potential activity centers (CA)

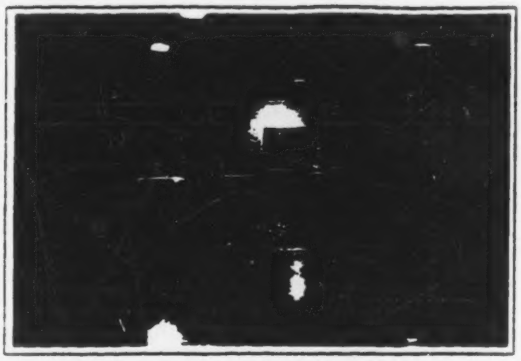
Table groups can be crowded with larger students and books and materials, do not provide students with opportunities to personalize their own space or provide for privacy some students need (C/S, P, P/O)

Carpet is not as clean as it could be and looks old (PCH, A/A)

Floor plan of typical self-contained classroom in School #32

Figure 6.11 The Assembly Space

(School #142 - Low Priority Concern #27)

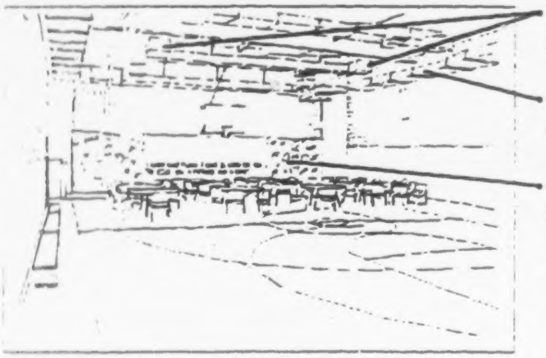


The gymnasium in School #142

Perceived Environmental Concerns

The existing gymnasium does not function well as a space for school-wide assemblies. Currently, the two largest spaces within the school are used in a multi-purpose fashion not suitable for any specific activity. The gymnasium, for instance used for small group instruction during the day which does not suit the special requirements of a learning setting. Lighting illumination, as well as the thermal comfort of the space are poor for instruction.

Analysis of the Components of Place

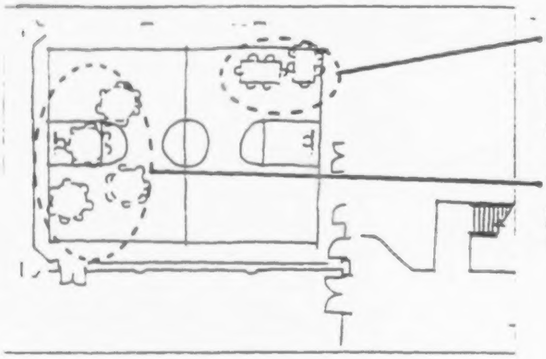


Sketch of gymnasium in School #142

The gymnasium is poorly illuminated for the diverse set of activities that take place in it (PCH)

The gymnasium has a poor air ventilation system (PCH)

Posters on the wall are an attempt to make the Coleman Cafe a mroe visually exicting and stimulating place to have a special lunch (A/A. SS)



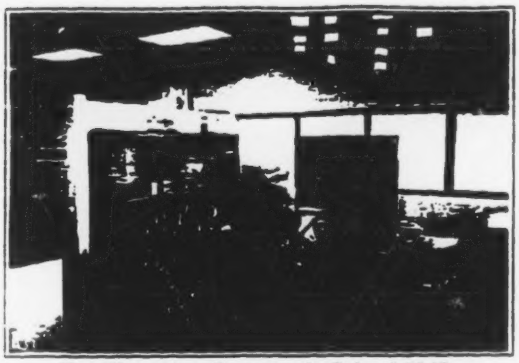
Floor plan of gymnasium in School #142

Two small group instruction tables temporarily occupy a corner of the gymnasium -- a response to the lack of small group instruction space within the open space instructional areas (C/S. CA. BF)

The Coleman Cafe occupies the south end of the gymnasium--a creative response to overcrowding in the cafeteria (C&S. BF/

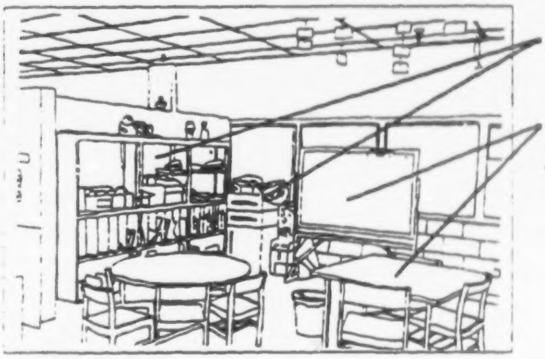
Figure 6.12 The Library/Media Center
(School #142 - High Priority Concern #6)

Perceived Environmental Concerns


The library/media center in School #142

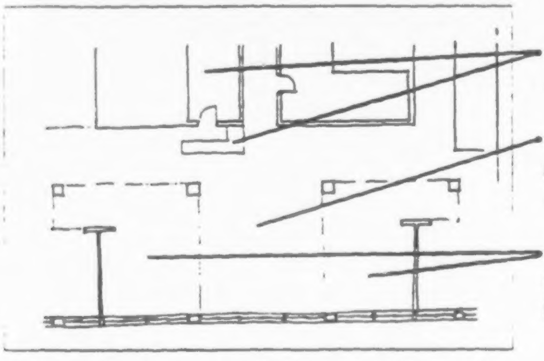
The library/media center has come under disuse due to the lack of funding for a librarian position and books. Ironically, the space continues to be refered to as the 'Media Center' even though it is not used for that purpose anymore. The lon-term goal is to convert this area into additional instructional areas or a health suite. The space on the second floor now **functions** as an unofficial, informal instructional space for adjoining classes throughout the day. This area also operates as an informal second floor commons space for students after school hours. Computers are inoperative, books are outdated and in disarray. The school has considered plans to rearrange the instructional space on the second floor to take advantage of this space.

Analysis of the Components of Place


Book storage in disarray (BF)

Area acts as an informal instructional area for ad joining classrooms with small group tables and movable chalkboard (CA)

Sketch of library/media center in School #142


Library counter and workroom now occupied by a special education class (CA, BF)

Main area of old media center now being used by adjacent classrooms as small group instruction space and as a private reading area (CA)

Areas that have already been taken over as rooms for smaller special education classes bounded in part by the old six-foot tall library bookshelving (BF, CA)

Floor plan of library/media center in School #142

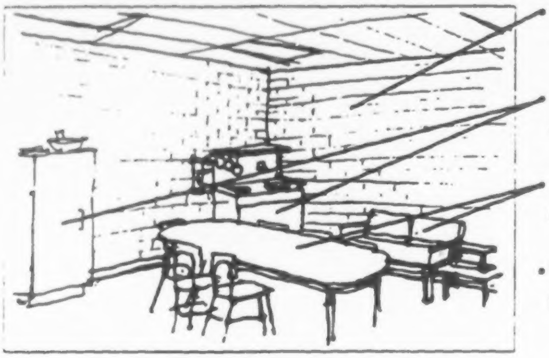
Figure 6.13 The Teachers' Lounge
(School #32 - Low Priority Concern #17)

Teacher's lounge in School #32

Perceived Environmental Concerns

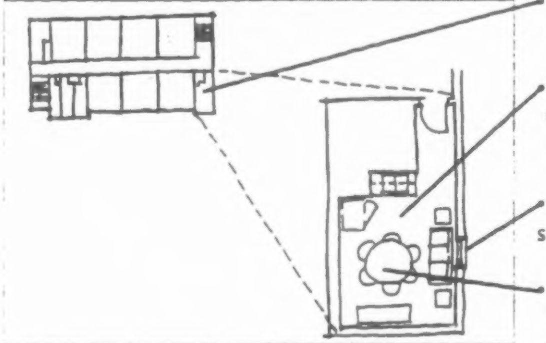
The teachers' lounge is not used due primarily to its **functional** remoteness to classrooms, unappealing **appearance, uncomfortable** temperature variations as well as teachers simply having a lack of adequate time for lunch. Currently, teachers meet to **socialize** and eat their lunches in the air-conditioned computer room or in their own rooms. The teacher interns have been known to use the teachers' lounge presumably to compare notes about their experiences in the classroom. It has been acknowledged by the administration that the teachers' lounge is in need of some renovation and possibly relocation, and steps are underway to improve these conditions for teachers.

Analysis of the Components of Place



Sketch of teacher's lounge in School #32

- The color and decor of the lounge are barren and unappealing to teachers (A/A)
- Sink, refrigerator and other kitchen equipment need to be replaced (BF)
- Furniture is old, damanged, and uncomfortable (A/A, BF)
- The lounge can be uncomfortably hot in the warmer months and cool in the winter months (PCH)

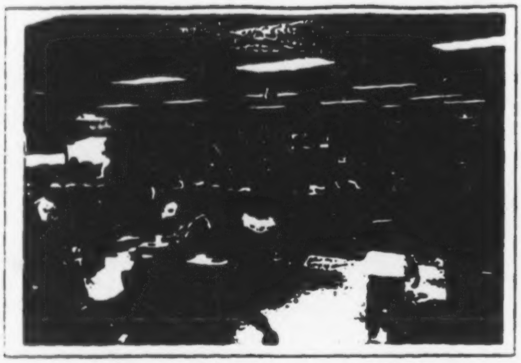


Floor plan of teachers' lounge at School #32

- The remoteness of the teachers' lounge to many teachers is seen as ahinderance to its use (BF)
- Interns, not teachers, use the remoteness of the lounge to privately meet and compare notes about classroom experiences (P, PSI, P/O)
- One window to the north does not provide a visually stimulating setting for relaxation (PCH)
- The small size of the room does not allow for the variety activities teachers often engage in while on their break such as preparing lessons, reading in private in addition to socializing with their peers (BF)

Figure 6.14 The Commons/Cafeteria
(School #142 - Low Priority Concern #27)

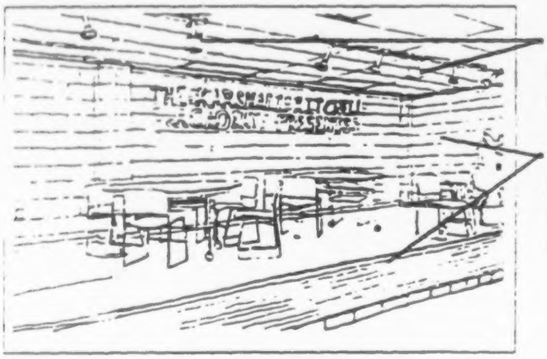
Perceived Environmental Concerns



Cafeteria/Commons in School #142

The location of the Commons/Cafeteria adjacent to the main entrance gives it a common space status that the space cannot provide due to its small size and functionally inflexible arrangement. Currently, the cafeteria is used in a multi-purpose space yet is not suitable for any specific activity. The cafeteria stage, for instance is used for small group instruction during the day which does not suit the special requirements of a learning setting. Odors from previous lunch periods are not easily ventilated and visual distrations from the lunch staff can create **discomforts** for students using the Commons as a place for learning.

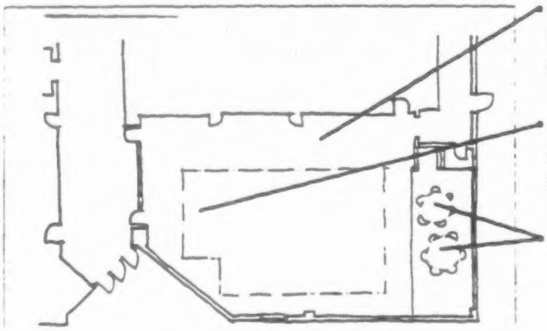
Analysis of the Components of Place



Sketch of Commons Stage at School #142

Incandescent illumination is not specifically designed for detailed task work required of students reading and writing in this small group area (PCH)

The structurally defined space of the stage provides the best remote location for small group instruction in the Commons -- a creative response to crowding in the instructional areas (BF)



Floor Plan of Cafeteria/Commons at School #142

Odors and overall poor air quality, not easily ventilated, created from previous lunch periods can create discomforts for students and teachers (PCH)

Cafeteria seating near the Commons entrance doors often used for small group instruction as well (BF, CA)

Small group instruction tables on stage (BF, CA)

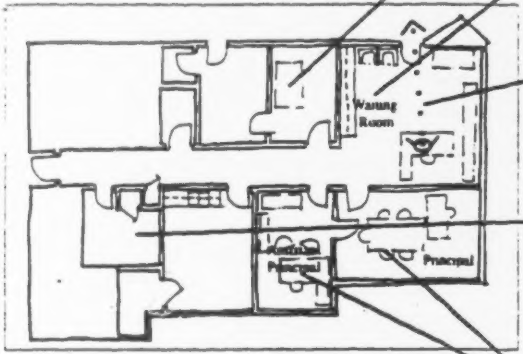
Figure 6.15 The Administrative Offices
(School #142 - High Priority Concern #18)

View into **Administrative Office from Main Lobby** at School #142

Perceived Environmental Concerns

Due to the influx of new **functions**, the administrative **area has become overcrowded**, the waiting room is **inadequate** for the amount of student, staff and visitor **traffic**, the principal has moved into the conference room to gain some **privacy** for her work and for sensitive meetings with staff and visitors. Other administrative rooms have been taken over by educational testing and attendance computer systems and other functions not previously planned for.

Analysis of the Components of Place

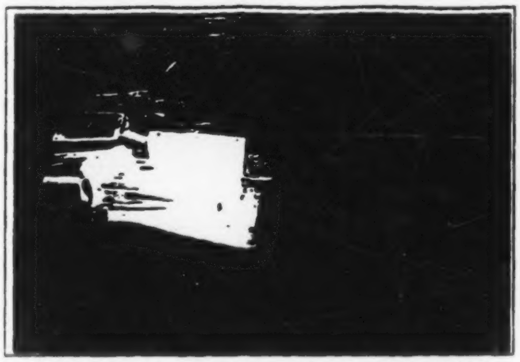


Floor Plan of the Administrative Offices in School #142

- A previous storage room now houses the new large copy machine that heats up the room by the middle of the day (BF, PCH)
- Waiting room not big enough to handle the amount of traffic from students, teachers, staff and visitors (C/S, BF)
- The receptionist does not have a clear view of the main entrance to the building -- intruders have come and gone without the knowledge of the receptionist (S/S, BF)
- A counselor's office has been redesignated the official comptuer records room for attendance and achievement test score documentation -- the counselor has been relocated on the second floor into a room once used for small group instruction (BF)
- The principal has moved out of her office, given it to the assistant principal and has occupied the conference room (BF)

?← - - - - For more privacy the principal has been known to move the conversation to a remote location in the building (P)

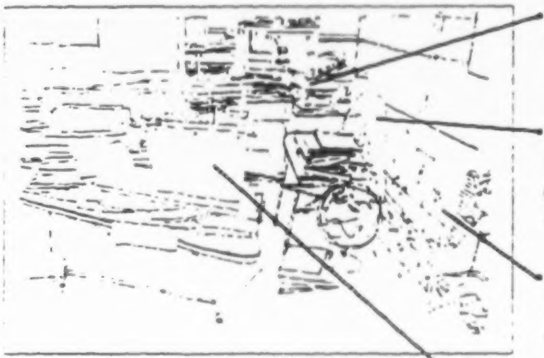
Figure 6.16 The Teacher's Desk & Storage
(School #142 - High Priority Concern #10)



The desk of a second floor teacher in School #142

Perceived Environmental Concerns

Teachers feel that they have adequate storage, it is just not properly organized or managed as it could be within the classroom. The classroom is not as **adaptable** to storage needs as teachers would like, and they do not have adequate personal workspace that is **secure** from theft. As a result, it is hard to do an inventory of books and supplies, and there is no room for additional storage needs. Books and supplies stored in open instructional areas are routinely stolen or misplaced.



Sketch of teacher's desk in School #142

Analysis of the Components of Place

- Stacked, unorganized storage of books, manuals and instructional materials on makeshift tables of extra student desks and are stolen (CA, A/A, S/S)
- Chair as temporary sweater hanger for times when open space gets too cold (winter or summer) with currently in use student portfolios and the world globe recently used in a class lecture (CA, A/A)
- Blueprint used by the author in his workshops, left for use by the school, has found its way into this teacher's desk area after she used it in a class to discuss architectural floor plans with her students (CA, A/A)
- Table filled with instructional materials (CA, A/A)
- Teachers do not have a private place to work so the classroom is used after hours or during their lunch hour when students are away (P, CA)

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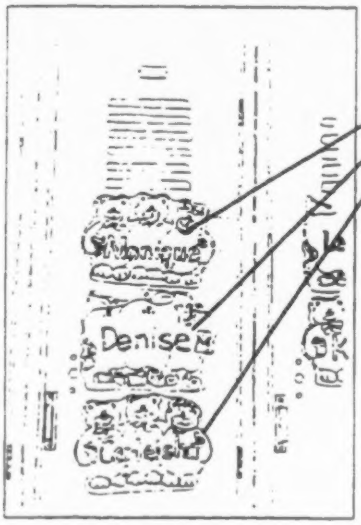
Figure 6.17 The Student Locker

(School #142 - High Priority Concern #20)

Perceived Environmental Concerns

Student lockers in School #142

The student locker is one of the few places in the school that students can call their own and have the opportunity to **personalize** and take **ownership** of. At School #142students are however required to share lockers which according to teachers reduces their sense of **privacy** over personal belongings, although it encourages then to learn to share. Unfortunately, as a result, many things are stolen or lost such as coats, bags, books, and tennis shoes among other items. An attempt has made to **help students personalize** the lockers with the names of each student using the locker.



Sketch of student lockers in School #142

Analysis of the Components of Place

- A traditional full-sized student locker is shared in in this instance by three students (P/O. P)

The seventeen (17) places of concern are not universal, and certainly not shared by all schools in the study. For instance, although Place of Concern #1 (POC#1): The School Grounds/Neighborhood Boundary and POC#2: The Parking Lot are of concern for all schools in the study, other places such as POC#13: The Teachers' Lounge and POC#15: The Administrative Offices were only of concern in three and one school respectively. It can be concluded from this finding alone that environmental quality will be experienced and defined differently depending on the school being investigated.

Further, these places of concern illustrate how environmental quality can be defined differently not only between schools, but within the school itself. Most obviously, types of environmental concerns occuring on the exterior will be different than the concerns within the interior of the school. However, even within the school, environmental concerns vary with place. For instance, the environmental concerns experienced in the POC#5:Main Lobby and the POC#9: The Classroom (Open) both in School #142 indicate that environmental quality will be defined differently. In the Main Lobby, crowding is a problem, similar to the Open Classroom, but security concerns are much more critical in the Lobby than in the Open Classroom. Further, environmental concerns in the Open Classroom have to do with privacy as well as adaptability problems in addition to crowding -- attributes of environmental quality not of concern in the Main Lobby.

It is evident from this analysis of place that the diagnosis, design and management of environmental quality must be done within the context of the place it is being experienced.

CHAPTER 7

ATTRIBUTES OF ENVIRONMENTAL QUALITY

> *"During the late Spring, the ambient temperature within the west-facing self-contained classrooms gets hot and stuffy for teachers and students alike. The teachers' desire and longing for natural daylighting, fresh air, spring breezes, and distant outdoor views have been overruled by more critical needs for security from potential intruders, which dictated the placing of metal grates on the now locked semi-transparent Plexiglas windows on the first floor." (Researcher observations)*

Of the ten attributes of environmental quality described in Chapter 6, five were perceived by the action research working groups as being of highest priority across the five schools in this study: 1. Physical Comfort & Health, 2. Classroom Adaptability, 3. Safety & Security, 4. Building Functionality, 5. Aesthetics & Appearance (See Appendix A for a complete listing of all environmental quality attributes in order of priority). These top five attributes of environmental quality will be described in detail. An aggregated set of environmental concerns associated with each environmental quality attribute is listed along with the specific school(s) experiencing these environmental concerns in parentheses. In addition, selected examples of the environmental quality attribute are provided (repeated from Chapter 6).

Included in these descriptions are selected findings from the survey data gathered *after* the environmental concerns were identified and the attributes were ranked. The survey data was collected as a means to first, check whether the information gathered from the working groups and interviews represented the school as a whole, and second, to provide more information on how teachers overall were experiencing environmental quality with respect to:

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- the frequency of encounters teachers experience particular attributes of environmental quality,
- whether teachers feel that concerns were being dealt with fairly or not,
- the degree of control teacher feel they had over the particular attribute of environmental quality,
- whether they feel the particular attribute of environmental quality is a help or a hinderance to their activities,
- overall how pleased or disappointed teachers are with the particular environmental quality and finally,
- how important teachers feel the attribute was in supporting the goals of maintaining a safe, health and nurturing learning climate and in increasing student achievement

The survey did not ask the larger group of teachers to identify environmental concerns specifically. The intent of the survey was not to collect more of the same type of data gathered during previous observations, interviews and workshops. Rather, the survey was intended to provide a deeper understanding of how teachers were experiencing environmental quality in their schools.

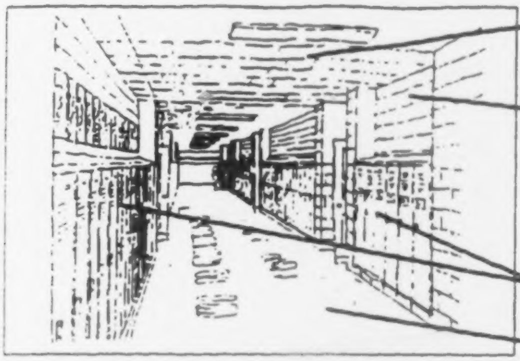
Physical Comfort & Health

Physical Comfort and Health is the most often discussed environmental quality of concern in the study. According to most teachers, physical comfort and health concerns are experienced either daily (32%), weekly (37%), or monthly (22%). The following is a list of physical comfort and health issues that were identified by working groups (See Appendix A for a complete listing of all ten environmental quality attributes).

- poor air flow and ventilation are seen as potentially contributing to many health-related problems in the school (Schools #25, 31, 138, 142)
- noise and distraction problems are seen as either a low or moderate priority in open instructional areas (25, 31, 138, 142)
- cold zones in air-conditioned buildings are of constant concern (31, 138, 142)
- poor bathroom ventilation, due primarily from ineffectively operating ceiling fans, is causing some minor odor concerns (138, 142)
- old carpeting, especially at lower grade levels where students sit on the floor, is seen as a health concern (31, 32)
- excessive heat in the months from May through September is a concern for the one school without central air-conditioning (32)
- acoustic problems in bathrooms and corridors may be due to an over abundance of hard surface materials and the absence of sound absorbing materials such as acoustical ceiling tile and carpeting (32)
- concern over the scope of custodial responsibilities with respect to cleaning classroom counters (32)
- plumbing and drainage system has on a few occasions failed to prevent first floor flooding causing a potential health risk (142)

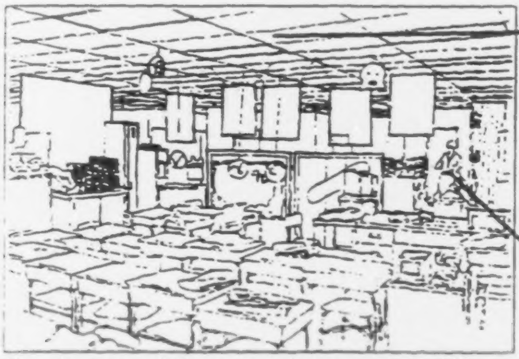
Although most teachers surveyed feel they have **little to no control (65%)** over the physical comfort and health concerns at their school, and despite the feeling that physical comfort and health concerns have been **somewhat hindering (44%)** in providing an effective environment for teaching and learning, teachers feel that the manner in which physical comfort and health concerns have been dealt with at their schools has been **somewhat fair (45%)**.

Figure 7.1 Examples of Physical Comfort & Health Environmental Concerns



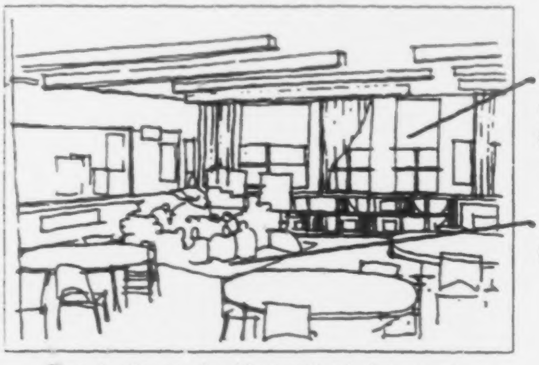
- Concrete block veneer ceiling contributes to noise reverberation in corridors throughout school (PCH)
- Painted concrete block walls contribute to noise reverberation (PCH)
- Metal lockers contribute to noise reverberation (PCH)
- Vinyl asbestos tile contribute to noise reverberation as well (PCH)

Sketch of typical corridor in School #32



- Forced-air mechanical system unable to heat and cool to satisfaction of occupants (PCH)
- Visual and acoustic distractions from adjoining class (PCH)

Sketch of second floor open classroom in Pod 'C' at School #138



- Weathered plexiglass windows do not provide clear views out and contribute glare in the afternoons (PCH)
- Carpet is not as clean as it could be and looks old (PCH)

Sketch of typical self-contained classrom in School #32

Overall, only **26%** of teachers indicated they were **somewhat to very disappointed** with respect to how physical comfort and health concerns have been addressed. A majority of teachers feel that physical comfort and health is **very important (65%)**, in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and **very important (56%)** in supporting the goal of increasing Student Academic Performance.

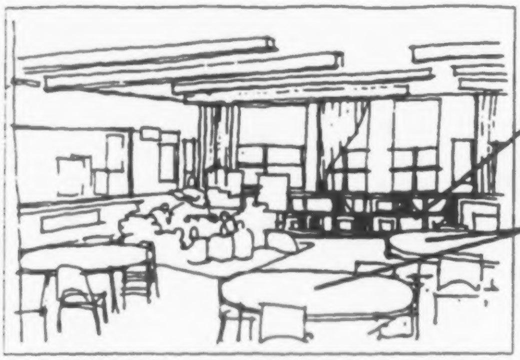
Classroom Adaptability

Fifty-percent of teachers responding to the survey indicated they are having problems with issues of classroom adaptability. Teachers experience problems on either a daily (14%), weekly (25%), or monthly (11%) basis. The following is a list of classroom adaptability issues identified. Each issue is ranked by the number of schools mentioning that issue.

- concerns over the effectiveness and adaptability of open plan versus self-contained classrooms (Schools #25, 142)
- computer installation and other problems limit classroom adaptability (32, 142)
- the need for additional storage space options (25)
- size and number of classroom tables seen as limiting options for self-contained classroom layout (32)
- inability to hang displays from concrete block walls limits available wall space (32)
- the need for additional electrical outlets in classrooms (31)
- difficulty conducting inter-class projects (32)
- problems with cooperative learning instruction in self-contained classrooms (32)

An equal percentage of teachers (50%) feel they have little control over the classroom adaptability at their school as do those who feel they have significant control. However, only **38%** of teachers feel that the manner in which classroom adaptability concerns have been dealt with at their schools has been **fair or somewhat fair**, as well as **somewhat to very helpful (30%)** in providing an effective environment for teaching and learning.

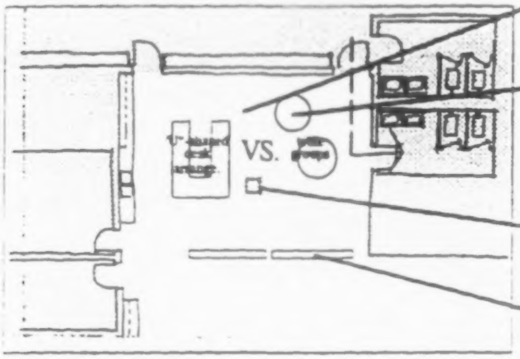
Figure 7.2 Examples of Classroom Adaptability Environmental Concerns



Student work is stored in shoe boxes at the edge of the classroom (CA)

Table groups take up space for potential activity centers (CA)

Sketch of typical self-contained classrom in School #32



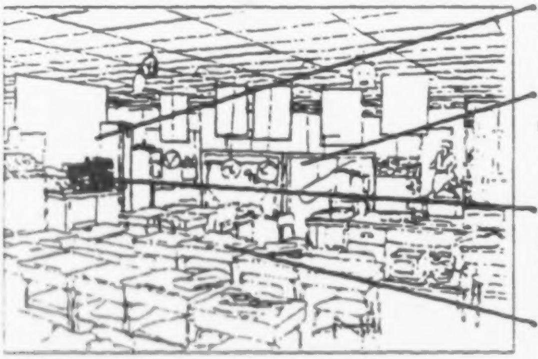
Crowded classroom leaves no room for activity centers (CA)

Replacement of "U"-shaped tables and teacher-talk pedagogy with circular tables and cooperative learning instruction during study improved student time-on-task (CA)

Column obstruction limits desk/table arrangements (CA)

Partitions recently acquired improved sense of enclosure to classroom, provided wall space for computer workstations and reduced some visual distractions (CA)

A plan of one teacher's open space plan classroom in School #142



Full-height partitions purchased for some teachers providing additional vertical display space (CA)

Half-height partitions do not provide enough vertical display space so teachers hang additional displays from the acoustical ceiling tile grid (CA)

Lack of storage in classroom leads to the stacking of books and supplies on existing cabinets originally intended as work surfaces (CA)

Row and column desks are packed in to open space classroom leaving no room for activity centers (CA)

Sketch of second floor open classroom in Pod 'C' at School #138

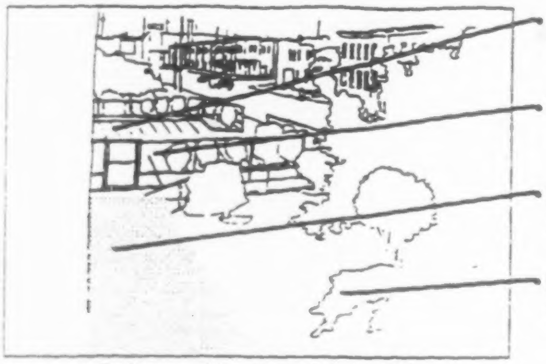
Overall, **50%** of teachers are **somewhat to very pleased** with how classroom adaptability concerns have been addressed at their school. A slight majority of teachers feel that classroom adaptability is either **very important (52%)**, or **somewhat important (34%)** in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and either **very important (55%)**, or **somewhat important (31%)** in supporting the goal of increasing Student Academic Performance.

Safety & Security

Although Safety and Security has the third highest statements of association between environmental concerns and environmental quality attributes, it was the most often mentioned high-priority environmental concern for all five schools. Most teachers indicated they experienced safety and security problems on a regular basis. All respondents claimed to having experienced a safety and security concern at one time or another. According to teachers, safety and security issues occur most often on a weekly (33%) or monthly (41%) basis. The following are a list of safety and security issues identified.

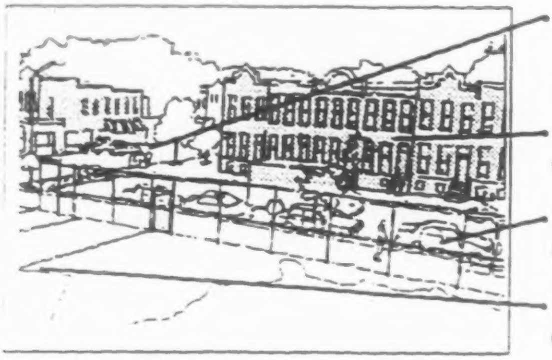
- concerns over neighborhood quality seen as compromising school safety and security (School #s 25, 31, 32, 138, 142)
- unsafe playgrounds and playground equipment contribute to safety problems (25, 31, 32, 138, 142)
- concerns over intruders and securing multiple points of entry (31, 32, 138, 142)
- poor outdoor lighting near parking lots encourage safety and security problems (25, 31)
- psychological safety on the building grounds (25, 138)
- child safety with parking lot vehicular traffic (32, 142)
- locked and semi-transparent windows increase security, but compromise visibility and daylight (32, 142)
- lack of garbage pick-up around dumpsters contributes to safety problems for students who play in the area (32, 138)
- inadequate emergency lighting in stairwells a safety risk (31)

Figure 7.3 Examples of Safety & Security Environmental Concerns



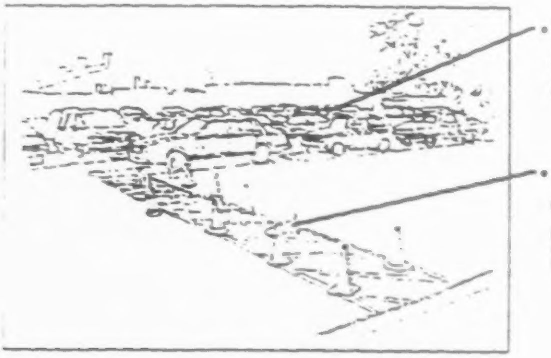
- Poor outdoor lighting for walkway to the parking lot and parking lot generally (S/S)
- Parking lot fencing has not been a deterant to tresspassing (S/S)
- Pathway to the parking lot perceived to be dark and unsupervisable (S/S)
- Fenced in grass area perceived to be a place for strangers to hide (S/S)

Path to parking lot at School #25



- Open-air drug dealing a constant concern of the neighborhood and the subject of police raids in the neighborhood over the past year (S/S)
- Abandoned and boarded up row bosues indicate a economically depressed neighborhood (S/S)
- Auto theft and break-ins are a regular occurance (S/S)
- Basketball court continuously trashed by residents of the neighborhood (S/S)

Sketch of neighborhood view from school grounds at School #138



- The parking lot becomes very congested by the end of the school day and traffic is difficult to control (S/S)
- Student safety guards (or "safeties") place orange cones along pedestrian paths to keep autos from crossing. Note knocked down cones from previous auto incursions into the egress lane (S/S)

Sketch of cross-traffic conflict at School #31

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- deterioration and lack of maintenance of city alley behind school a safety concern (25, 32)
- poor upkeep of grounds seen as a potential safety concern (31, 138)
- congested main stair during arrivals and dismissal may compromise safety (138)

Despite the relatively high perceived frequency of safety and security issues, most teachers feel they have **some control (55%)** over their personal safety at their school. In addition, **69%** of teachers feel that the manner in which safety and security concerns have been addressed have been **fair to somewhat fair**, as well as **somewhat helpful (41%)** in providing a safe environment for teaching and learning.

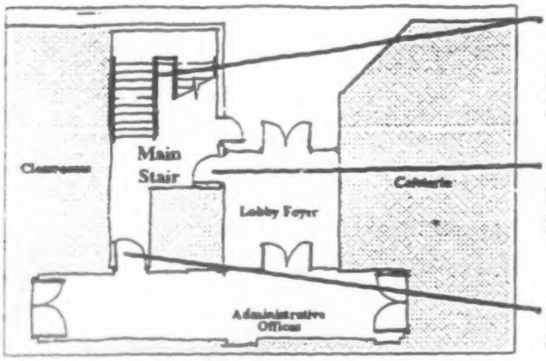
Overall, **50%** teachers are **somewhat to very pleased** with how safety and security concerns have been addressed at their school. A majority of teachers surveyed feel that safety and security is **very important (72%)** in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and **very important (64%)** in supporting the goal of increasing Student Academic Performance.

Building Functionality

Sixty-four percent of teachers experience problems with building functionality. Most teachers encounter building functionality issues daily (25%) and weekly (21%). The following is a list of building functionality issues identified.

- concerns with compliance with ADA Accessibility laws (Americans With Disability Act) (Schools #25, 31, 32, 138)
- lack of both playground equipment and an adequate tot lot area are seen as limiting functional use of the building grounds (138)
- congestion in the main stair during morning arrivals and dismissals compromises efficient circulation and movement (138)
- an underutilized library/media center limits effective building functionality (142)
- problems with parents finding way to child's classroom may be a consequence of

Figure 7.4 Examples of Building Functionality Environmental Concerns

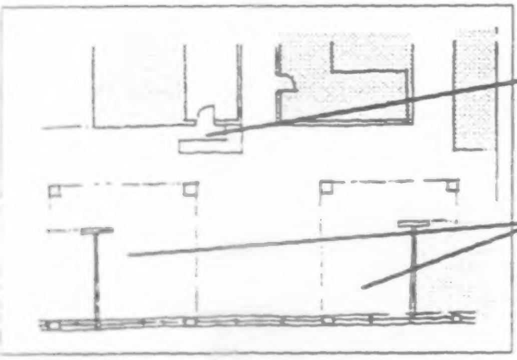


Main stairs used throughout the day for all traffic from the second floor while the two stair towers on either end of the building are not used due to problems with intruders (BF)

Door from lobby foyer to main stair allows access to the building without supervision from the administrative offices (BF)

Single door egress from stairs functionally problematic during exiting (BF)

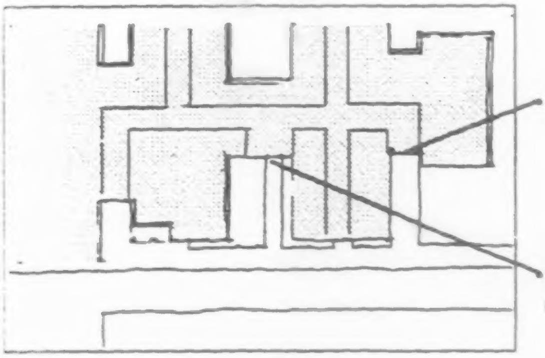
Floor plan of main entrance, lobby and stairwell in School #138



Library counter and workroom now occupied by a special education class (BF)

Areas that have already been taken over as rooms for smaller special education classes bounded in part by the old six-foot tall library bookshelving (BF)

Floor plan of library/media center in School #142



Entry to the kindergarten wing remote and difficult to monitor throughout the school day (BF)

Entry to main stairs to the second floor openned only during morning arrival and afternoon dismissal (BF)

Site plan of School #31

unclear functional layouts and signage (142)

- unorganized central storage room limits functionality (142)
- crowded administrative area not functional (142)
- inadequate lobby design creates some functional problems (142)
- mismatch between community school vision and facility layout (142)
- inadequate furnishing of the teachers' lounge (31)
- cafeteria/auditorium divider partition in disrepair (31)
- lack of assembly space severely limits for school-wide activities (142)

Most teachers feel they have **little or no control (69%)** over the building functionality at their school. In addition, **41%** of teachers responding to the survey feel that the manner in which building functionality concerns have been dealt with have been **fair to somewhat fair**, as well as **somewhat to very hindering (38%)** in providing an effective environment for teaching and learning.

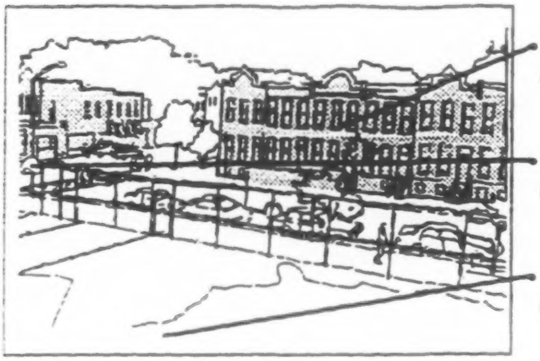
Overall, only **31%** of teachers are **somewhat to very pleased** with how building functionality concerns have been addressed. A majority of teachers feel that building functionality is either **very important (52%)**, or **somewhat important (34%)** in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and either **very important (55%)**, or **somewhat important (31%)** in supporting the goal of increasing Student Academic Performance.

Aesthetics & Appearance

Sixty-nine percent of teachers responding to the survey claim to experience concerns over aesthetics and appearance of their school. The frequency of experience is broad ranging from daily to weekly (30%) and monthly to yearly (38%). The following is a list of classroom adaptability issues identified.

- the appearance of existing playgrounds is of concern (Schools #25, 31, 32, 138, 142)

Figure 7.5 Examples of Aesthetics & Appearance Environmental Concerns

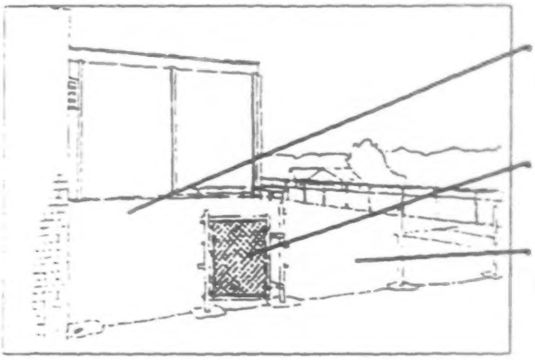


Abandoned and boarded up row houses indicate a economically depressed neighborhood (A/A)

Basketball court continuously trashed by residents of the neighborhood (A/A)

Playground equipment and grounds in disrepair (A/A)

Sketch of neighborhood view from school grounds at School #138

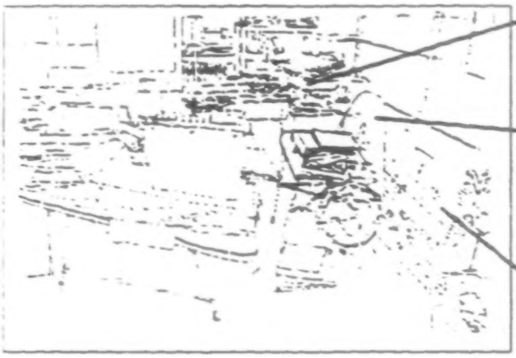


Drug paraphernalia, broken glass and trash found routinely (A/A)

Fencing stolen (A/A)

Playground surfaces cracked and not maintained (A/A)

Sketch of what remains of the playground at School #31



Stacked, unorganized storage of books, manuals and instructional materials on makeshift tables of extra student desks and are stolen (A/A)

Chair as temporary sweater hanger for times when open space gets too cold (winter or summer) with currently in use student portfolios and the world globe recently used in a class lecture (A/A)

Blueprint used by the author in his workshops, left for use by the school, has found its way into this teacher's desk area after she used it in a class to discuss architectural floor plans with her students! (A/A)

Sketch of teacher's desk in School #142

- semi-transparent windows are seen as unsightly (25, 31, 32, 138, 142)
- concern over the upkeep of the school grounds (25, 31, 138)
- concerns over the poor appearance of the neighboring property and city alley (25, 32, 138)
- old carpeting is seen as hindering the appearance of the school (31)

Two issues that were brought up but not of concern were:

- the interior of the school is perceived as clean and orderly (25, 31, 32, 138)
- interest in landscape projects as a way to improve the appearance of the grounds considered (142)

Seventy-three percent of teachers feel they have **some to significant control** over the aesthetics and appearance concerns at their school. Supporting this finding is that the same **73%** of teachers feel that the manner in which aesthetics and appearance concerns have been dealt with have been **fair to somewhat fair**, as well as **very to somewhat helpful (62%)** in providing an effective environment for teaching and learning.

Overall, **77%** of teachers are **very to somewhat pleased** with how aesthetics and appearance concerns have been addressed. A majority of teachers feel that aesthetics and appearance is either **very important (64%)**, or **somewhat important (32%)** in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and either **very important (56%)**, or **somewhat important (30%)** in supporting the goal of increasing Student Academic Performance.

Environmental Perceptions of Students

Thus far in the analysis of the perceptions of environmental quality in this study only the perceptions of administrators, teachers and parent volunteers have been investigated. Recognizing that perceptions vary with each individual, it is important to obtain the widest possible perspective within the school. For this reason, the perceptions of students are seen as integral to understanding how environmental quality was being experienced in these schools.

In order to gain the student perspective, teachers within the working groups were asked to have their students complete a short five-item survey which asked students to describe their favorite places in school, as well as, what they liked and disliked about their classrooms in particular. Student survey data sets for each school varied widely in number (similar to the teacher survey data sets) not allowing a valid comparative analysis between schools. A total of 123 surveys were collected across all schools. The following findings present an aggregated picture of student perceptions.

Favorite Places

When students were asked what was their favorite place in their school they responded with this list (ranked from most to least responses):

1. Gym (95)
2. Classroom (40)
3. Computer Lab (18) (Only three schools had computer labs)
4. Cafeteria (Lunchroom) (17)
5. Library (15)
5. Art (15)
6. Music (3)

The gym was by far the most favored space since students can run and play and "do whatever we want to do" as well as play basketball and other games. Some students enjoyed the spaciousness of the gym and the fact that they often learned new games and had music and parties on the gym. One student in School #25 enjoys the morning meetings that take place in her gym.

The classroom was the second most popular place in the school primarily due to the fact that students feel they "learn lots of fun things," get help on school work and have fun learning and playing games in the classroom. Some students in School #142 mentioned they enjoyed listening to music and watching movies in their classroom. Access to computers was a frequently mentioned reason for chosing the classroom as a favorite place in School #25. Students often mentioned they liked their teachers as well.

Students also enjoy the computer labs in their schools. They like to play games on the computer as well as learn to do math. They enjoy as they say "getting on the computer" which they see as a problem in their classrooms where computers are less available to students. A few students suggested that they each have their own computer at their desk.

The cafeteria is often mentioned by students as a place to eat, talk, play and clean-up. The lunchroom is perceived as a place where students feel they can unwind and be themselves; a place were they can get away with "running around" if they want to.

The library is also mentioned by students as a favorite place primarily for reading books and working on computers. The quiet atmosphere is another reason some students like the library. They often mention their dislike of other students talking while they are trying to read.

The art room is mentioned quite often as well, despite the fact that only three schools in the sample of surveys received have an art room. There are many students who enjoy drawing and artwork and are well aware of their talent in that area. They enjoy getting out of the classroom and into their art class where they can work on projects that interest them the most.

Other favorite places were school specific. Some other places included the Sylvan Learning Center in School #142, the office in School #31 and #32 where students often help adult staff, the spanish lab in School #31 was a popular place, the CCC Lab in School #25, and the sandtable in a kindergarten class in School #25. One student suggested that he liked "everywhere" in the school.

Fun Places to Learn

When students are asked what are fun places to learn in their schools they respond as follows:

1. Classroom (87)
2. Gym (42)
3. Computer Lab (20)
4. Library (19)
5. Art Room (7)
5. Music Room (7)
6. Auditorium (2)

The classroom is by far the most recognizable place students associate with learning. They indicate that "teachers help me learn." Other reasons they choose the classroom as a fun place to learn is their friends are there, the rooms are pretty and nicely decorated, it is fun to go up to the board and solve math problems, they like their teacher, they learn role playing, listen to the teacher tell stories, enjoy math, spelling and reading (although not all the students enjoy these "tasks" as a few stated). One student in School #25 got all excited when he writes about "getting on the computer".

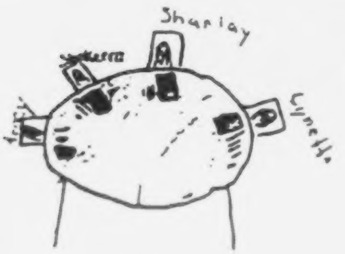
The gym makes a strong second as a fun place to learn. Many students in all schools mention the fun of learning new games especially basketball. A large majority of drawings students drew for the survey were of their performance on the basketball court in their gyms. In addition the basketball, students indicate they have physical education classes they enjoy were they learn to exercise.

The computer lab continues to be mentioned as well. Students indicate almost unanimously they enjoy learning math on computers. The library is a place were students say they can concentrate on their reading and other assignments. Art and Music rooms are also identified as places of learning as well; some students are very explicit about the fact that

Figure 7.6 Sample Pictures of Students' Favorite Place in the School

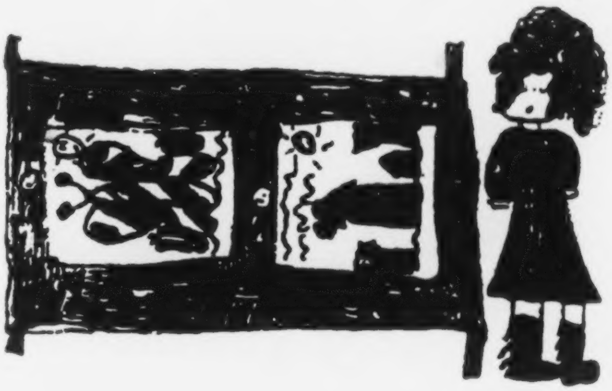
EVERychild

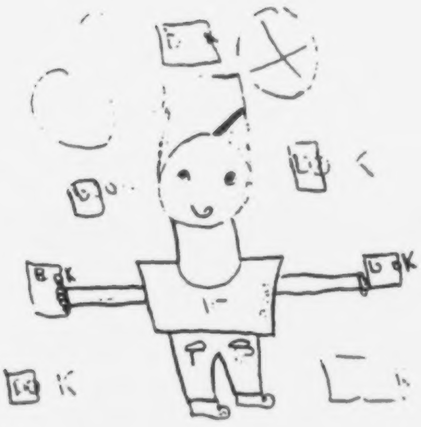
my classroom



Second grade student's drawing of her classroom table of friends

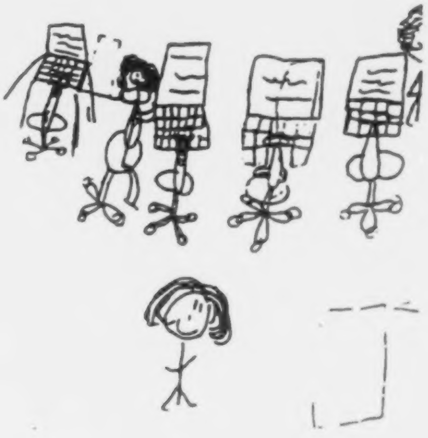
Fourth grade student's drawing of her art classroom



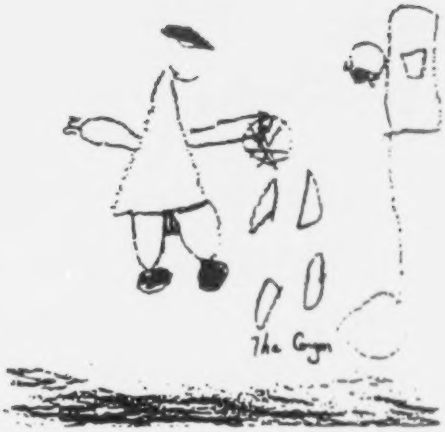


Fifth grade student's drawing of herself with books in the library

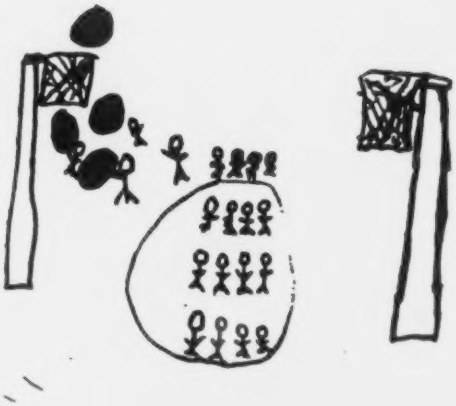
Figure 7.6 Sample Pictures of Students' Favorite Place in the School (Continued)



First grade student's drawing of her computer room



First grade student's drawing of himself playing basketball in the gymnasium



Third grade student's drawing of his classmates playing basketball in the gymnasium they learn while completing art and music projects too. A few students in School #31 mentioned they learned to dance in the auditorium during a dance learning program offered by their school that Fall.

Other places students mentioned as places they enjoyed learning in included a reading lab in School #25, spanish class in School #31, one student in crowded School #142 enjoyed the hallway as a quiet place to go where he and his group could "cooperate." And again in School #142, students enjoy Sylvan Learning Center where they receive prizes and tokens for completing specific learning tasks.

Classroom Likes and Dislikes

When students are asked **what they like about their classrooms** they responded: I like...

1. decorations on classroom walls (31) [A/A,SS]
2. to read books in class (25)
3. math (23)
4. using computers in their class (22) [CA]
5. playing games (20)
6. my teacher (18)
7. my friends (10)
8. writing (8)
9. lots of space to do things (8) [CA]
10. clean and organized classroom (6) [A/A]
11. how my classroom is fun and exciting (5)
11. drawing (5)
12. my open classroom with no doors (4) [PCH]
13. making things (projects) (3)
14. library centers and listening centers (2) [CA]
15. not noisy (1) [PCH]
15. that we are allowed to talk softly (1)

Students clearly enjoy the aesthetics and appearance of their school. They are very aware of the sensory stimulation of their classroom. Teachers are aware of this and do a good job of providing a rich sensory experience for their students. It is also clear that they enjoy reading and math and using computers in class in addition to playing games. On the whole, students like their teachers and having their friends in class with them. In addition, they are aware of the orderliness and layout of their classroom. Finally, they understand that they are asked to be quiet, but appreciate being able to at least talk softly to their friends.

When students are asked **what they do not like about their classrooms** they responded: I do not like...

1. that my classroom has no walls, doors and that we are always being disrupted by other classes walking by (23) [PCH]
2. other students in my class fighting, talking and being trouble-makers (18) [PSI]
3. the noise from other classes (9) [PCH]
4. that my classroom is not clean and is trashy (9) [A/A]
5. do not like reading (6)
6. that talking is not allowed (4)
6. the pictures on the walls (4) [A/A, SS]
6. that we have to do hard work sometimes (4)
6. writing (4)
7. my teacher (3)
7. that there are not enough computers in my classroom (3) [CA]
7. math homework (3)
7. staying after school (3)
8. classroom rules (1)
8. that we can't play games in class (1)
8. that the classroom is too cold (1) [PCH]
8. that the classroom is too hot (1) [PCH]

(Note that those environmental concerns on this list associated with environmental quality attributes are coded in square brackets, while the number of times each environmental concern was mentioned by students is recorded in parentheses.)

Students are keenly aware and most concerned about open space being too distracting. What makes this finding most significant is that these occurrences represent student concerns in only three of the four schools participating. This problem is high on teacher's list as well and reinforces their concerns.

Students are also preoccupied with the misconduct of their fellow students that distracts them further from their work. Noise from other classes accentuates this problem. In addition, many students do not like learning in a messy classroom.

Comparative Analysis: Environmental Quality Concerns of Teachers and Students

To illustrate the differences in perception between teachers and student the following Table 7.1 summarizes the rank order of the top five environmental quality attributes of concern for both students and teachers. The rank order for teachers has been previously determined at the start of this chapter. The rank order for students was derived from an analysis of the results from the question "what do you not like about your classroom?" on page 181. For example, students indicated a total of 34 environmental concerns that can be directly associated with the environmental quality attribute Physical Comfort & Health: the top attribute of concern for students. Places for Social Interaction was mentioned 18 times and therefore was ranked as the second highest environmental quality of concern, and so forth.

Table 7.1
A Comparison Rank Order of Environmental Quality Attributes of Concern for Students and Teachers

Teachers	Students
1. Physical Comfort & Health	1. Physical Comfort & Health
2. Classroom Adaptability	2. Places for Social Interaction
3. Safety & Security	3. Aesthetics & Appearance
4. Building Functionality	4. Sensory Stimulation
5. Aesthetics & Appearance	5. Classroom Adaptability

Students and teachers are both acutely aware of physical comfort and health issues such as noise and distractions. The most striking difference between teachers and students concerns thermal comfort issues. Only one student in the five schools surveyed mentioned their classroom as being too cold, while another, in the same school (School #142) mentiond their classroom was too hot. This is the exact opposite finding from the perceptions of teachers who in ranking physical comfort and health issues as their top priority referred primarily to thermal comfort issues. During interviews, many teachers and staff admitted that thermal conditions seem to affect them more than their students, and maintain that thermal conditions are most likely affecting their students' academic performance.

As might be expected from the way the survey questions were phrased (i.e., what do you not like about your *classroom*), students appear to be more aware of the immediate environment around them focusing primarily on issues of unwanted social interaction and noise and distraction in their places of learning (physical comfort and health), and the aesthetics and appearance and sensory stimulation of their classroom surroundings. Teachers are much more concerned with the larger school environment citing safety and security and building functionality issues of high priority.

With respect to classroom adaptibility issues, although not at the top of the list of concerns as it is for teachers, some students are still concerned that the classroom does not support computer instruction. Students concern for controlled places for social interaction is shared by teachers who also complain about visual and acoustic distractions in classrooms.

CHAPTER 8

ENVIRONMENTAL QUALITY AND EDUCATIONAL OUTCOMES

> *For Ms. Harrington, the fact that her school does not have a centralized air-conditioning system is unfair to her students, especially during certain periods during the school year when tests are being conducted. As she explained, "When you don't have the comfort you need to maintain a healthy body you don't care about socializing, you don't care about history lessons and the revolutionary war, your worried about survival...that's one of the basic needs, the hierarchy of needs."*

Educators in the study consistently argued that poor environmental qualities, such as physical comfort and health, influenced the process of learning and teaching and ultimately educational outcomes such as achievement test scores and levels of attendance. Educators clearly perceive a relationship between environmental quality and educational outcomes that has yet to be scientifically validated. As the literature review in Chapter 2 indicates, there is evidence that many characteristics of the physical environment of the school affect psychological processes such as behavior, attitudes, motivation, and morale. Other than class size and possibly school size, however, evidence is still inconclusive with respect to the impact of many other environmental factors on educational outcomes. Although many environmental factors have been recognized discrete variables, what is not known is how these environmental factors *interact* in contributing to educational quality. Which environmental factors take precedence over others? Which environmental factors do educators feel are most critical in supporting their educational activities and goals?

To what *degree* the maintenance and improvement of environmental quality contributes overall to educational quality is unclear from this study. However, it is clear that environmental quality is perceived by the occupants of each school in the study as one of the critical indicators of educational quality along side the more familiar indicators as the school's social climate, student socio-economic background and the quality of the student's home and neighborhood environments. In order to discover which specific environmental qualities might be linked to educational processes and outcomes, participants were asked to identify those environmental qualities that they perceived are having the greatest impact on student academic performance, student social development and teacher instructional performance.

This study asks the question: what are the attributes of environmental quality that are perceived to influence on the educational outcomes? Teachers and parent volunteers were in the best position to respond to this question due to their immediate and extended experience in these schools teaching and observing learning in their students on a daily basis. In an effort to answer this question, working groups were asked to determine which prioritized environmental concerns they felt influenced any of three educational outcomes: Student Academic Performance, Student Social Development and/or Teacher Instructional Performance. These three educational outcomes were defined as follows:

- *Student Academic Performance* referred not only to achievement test scores, but also to evidence of day-to-day academic performance on in-class work assignments, quizzes and other tasks.
- *Student Social Development* was intended to refer to various social behaviors such as evidence of cooperative and competitive behaviors, incidents of disruptive behaviors, as well as feelings of self-esteem.
- *Teacher Instructional Performance* was intended to refer to the ability of a teacher to focus effectively on the instructional needs of his/her students.

These three educational outcomes were researcher-identified and broadly defined in such as way as to provide a familiar starting point for discussing the overall goals of the educational process with participants. Student academic performance is the most familiar goal of schooling, while the social development needs of students are often overlooked as an important outcome of schooling. Finally teacher instructional performance was seen by the researcher as another overlooked, but critical process outcome that may have an indirect effect on student academic performance.

Environmental Quality and Student Academic Performance

Within the context of the five schools in the study, the environmental quality attributes most often mentioned as having a perceived influence on Student Academic Performance include: Physical Comfort & Health and Classroom Adaptability. The environmental qualities of Safety & Security, Building Functionality, Personalization & Ownership and Privacy were also identified as having an influence on Student Academic Performance, but were not mentioned as often. Environmental qualities are listed in order of confidence of finding which is determined by the number of times a particular quality was mentioned by working groups across all schools in the study.

Physical Comfort and Health, in particular, concerns over thermal comfort, air flow, ventilation, and noise are perceived to have an impact on Student Academic Performance. (Each concern is ranked by the number of schools mentioning that concern. Schools identifying a particular concern are noted in parentheses.)

- Poor air flow circulation and ventilation were the main causes of concern for all schools. Even when the few operable second floor windows are opened, very little fresh air can be effectively circulated. These conditions may be contributing to air borne bacteria causing many health-related problems which may in turn have the potential of influencing student attitudes, mood, and ultimately performance through lost instructional time. (Schools #25, 31, 32, 138, 142)

- Thermal comfort can be of real concern especially during periods when tests are being conducted. Teachers believe students are often unable to concentrate as easily on tasks. (25, 31, 32, 138, 142)

- Problems with noise in open space instructional areas is identified by the working group as a moderate priority that could have some influence on Student Academic Performance by continually distracting students from their work.(25, 138, 142)

- Concerns for lack of ventilation have kept one teacher from conducting science projects in his instructional area, hindering potential curricular choices that could impact Student Academic Performance.(142)

Classroom Adaptability, in particular, concerns over both open plan and self-contained classrooms and technological adaptability, are perceived to have an impact on Student Academic Performance.

- Open plan instructional areas are seen by teachers as having an affect on student academic performance. The open plan arrangement, the working groups argued, causes problems with noise and distractions from other classes that teachers believe breaks students' concentration. (Schools #25, 31, 138, 142).
- One working group feels that the availability of electrical outlets and lack of wire cable runs for future computer installation may influence classroom adaptability thereby potentially affecting student academic performance. (31)
- The requirement to use tables for cooperative learning takes up more room than the chairs once did. The inefficient layout and installation of new classroom computers in a few rooms take up even more space. The tightness of space and of working groups does not provide students, at times, with enough of a work surface to do their work creating distractions and affecting the quality of their work. (32)

Safety and Security concerns, in particular, concerns over poor neighborhood quality, feelings of safety on building grounds, and safety from intruders, are perceived to have an impact on Student Academic Performance.

- Safety and security as represented by the issues of perceived poor neighborhood quality and psychological safety on school building grounds, is seen by teachers to potentially affect student academic performance as illustrated by their students' preoccupation with problems at home which take time away from focused school work. (Schools #25, 31, 32, 138, 142)
- Teachers in the working group are well aware of the implications of safety and security problems on the ability of students to focus on learning. Due to recent incidents the custodian has established a new policy to lock the main entrance doors very soon after classes start and again directly after dismissal. The students' awareness of these incidents may further contribute to an inability to focus on the their work. (31)

Building Functionality concerns, in particular, concerns over handicapped accessibility and mismatches between building layout and educational programs, are perceived to have an impact on Student Academic Performance.

- Concerning the issue of ADA Accessibility, several of the working groups reasoned that although they did not have an physically disabled students, if they were to have one, accessibility issues might affect that student's ability to use the entire facility, possibly effecting that student's performance. (Schools No. 25, 31, 32, 138, 142)

- Currently, mismatches between building functionality and organizational activities in one school are perceived by teachers to be affecting student academic performance. Instructional space has been occupied by various outside agencies limiting the size and thus the functional effectiveness of many open space instructional areas.(142)

Personalization and Ownership concerns, in particular, encouraging ownership of school grounds, as well as providing opportunities for self-expression within the school, are perceived to have an impact on Student Academic Performance.

- Theperceived lack of ownership of the school grounds is seen as potentially affecting student attitudes and behavior that may hinder their performance. Evidence of this lack of ownership on the part of the community confronts students and teachers alike everyday: garbage, broken bottles, graffiti and other paraphernalia are strewn across the school site. (25, 31, 32, 138, 142)

- Within the school however, teachers and students are capable of personalizing their space and have gained a strong sense of ownership. Students learn the importance of taking responsibility for their actions. These attitudes, according to working groups, eventually influence their academic performance as well. (25, 31, 32, 138, 142)

- Teachers have developed several strategies to help students gain a sense of ownership and control over the limited space they do have. Most students have individual lockers (some students have to share with others) that are all individually personalized with the student's name and some artwork they have completed in a recent assignment. However, in some instances, due to the use of tables for cooperative learning strategies, students do not have desks to store their materials, and as a result, many student's personal belongings may be stacked on top of the working group tables, limiting effec-

> tive workspace. Several teachers have developed a system of shoe boxes for students to keep their materials and supplies in. The school has thus far been unable to procure adequate under table drawers for these tables so as to provide some additional working surface on the tables. (32)

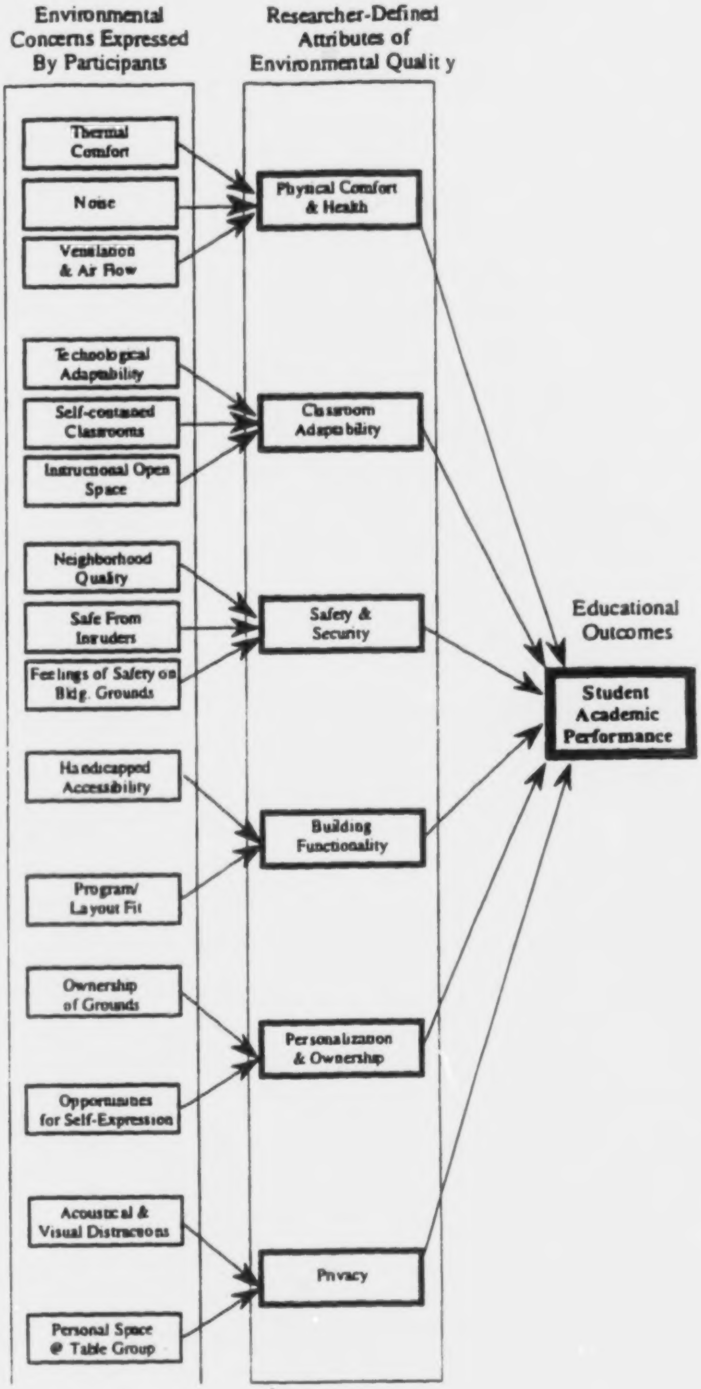
Privacy concerns, in particular, concerns over acoustic and visual privacy in open space instructional areas and personal space at table groupings, are perceived to have an impact on Student Academic Performance.

- Open space instructional areas are seen by the working group as providing little privacy for students which has the potential to effect student academic performance. The performance of some students who work well in small groups or in privacy that are unable to do so because of the physical layout of the school, may suffer. Some classroom areas within the school provide places such as corners or activity areas, others do not. Several teachers indicated that students are allowed to go to any place within the classroom, but often only a few choose this option. (Schools# 25, 138, 142)

- When students do not get the personal space they need, the situation often results in fights. One teacher stated: "We average several fights a week." In a situation such as this, students can become territorial about their workspace and this can become another major obstacle to securing their sense of privacy and personal space. Self-contained classrooms limit the ability of teachers to provide semi-private work areas for students in need of a such as place. Crowded classroom tables in these classrooms add to this perception. (32)

See Figure 8.1 on the following page that summarizes the perceived impact of these attributes of environmental quality on student academic performance. (Note that directional arrows indicate the teacher perceived impacts of environmental concerns and attributes of environmental quality on student academic performance).

Figure 8.1
Perceived Relationships Between Environmental Concerns, Attributes of Environmental Quality and Student Academic Performance


Environmental Concerns Expressed By Participants
Researcher-Defined Attributes of Environmental Quality
Thermal Comfort
Noise
Ventilation & Air Flow
Physical Comfort & Health
Technological Adaptability
Self-contained Classrooms
Instructional Open Space
Classroom Adaptability
Neighborhood Quality
Safe From Intruders
Feelings of Safety on Bldg. Grounds
Safety & Security
Handicapped Accessibility
Program/ Layout Fit
Building Functionality
Ownership of Grounds
Opportunities for Self-Expression
Personalization & Ownership
Acoustical & Visual Distractions
Personal Space @ Table Group
Privacy
Educational Outcomes
Student Academic Performance

Environmental Quality and Student Social Development

Within the context of the five schools in the study, the environmental quality attributes most often mentioned as having a perceived influence on Student Social Development include: Physical Comfort & Health, Safety & Security, Personalization & Ownership (See Figure 8.2). The environmental qualities of Aesthetics & Appearance, Classroom Adaptability, Building Functionality, and Places for Social Interaction were also perceived as having an influence on Student Social Development, but were not mentioned as often. (Environmental qualities are listed in order of confidence of finding which is determined by the number of times a particular quality was mentioned by working groups across all schools in the study.)

Physical Comfort and Health concerns, in particular, thermal comfort, air flow, ventilation and noise are perceived to have an impact on Student Social Development. (Each issue is ranked by the number of schools mentioning that issue. Schools identifying a particular issue are noted in parentheses.)

- Teachers indicated that when students do not have the thermal comfort they need they become less interested in socializing and more interested in just surviving the heat or the cold. Some students withdrawal, while others become disruptive. (Schools# 25, 31, 32, 138, 142)
- Poor air flow circulation and ventilation were the main causes of concern for all schools as well. Even when the few operable second floor windows are opened, very little fresh air can be effectively circulated. These conditions may be contributing to air borne bacteria causing many health-related problems which may in turn have the potential of influencing student attitudes and behavior and ultimately opportunities for positive social development. (25, 31, 32, 138, 142)
- Problems with noise in open space instructional areas is identified by the working group as moderate priority that could have some influence on the social development of students by continually distracting students from interaction with their immediate group. (25, 138, 142)

Safety and Security concerns, in particular, poor neighborhood quality, lack of safe places to play, feelings of safety, and safety from intruders, are perceived to have an impact on Student Social Development.

- Student social development was perceived by teachers to be effected by perceived poor neighborhood quality as illustrated by in-school fighting, the result of social behavior learned at home or in the community subsequently brought into the school. (Schools# 25, 31, 32, 138, 142)

- Safety on the playground is interpreted by the working group to hinder possibilities for student social development, in that the deteriorating conditions of the playground and equipment do not as easily support teachers' attempts at organizing constructive play, thereby creating more reluctance on the part of the teacher to have students play on the grounds. Playground safety has also been seen as a high-priority problem. As is a problem at many of the district's schools, the playground has not been updated since the school's original construction. Outdated metal pipe "jungle gym" playground equipment has slowly degraded to the point of being extremely unsafe. (25, 31, 32, 138, 142)

- The presence of vehicular traffic is seen as potentially inhibiting social development of students through the limited opportunities for safe places to play. (31, 142)

- Teachers in the working group believe the intruder incidents have an effect on the social development of their students. Students are aware of the defensive stance the school must take with regard to visitors and intruders. Due to recent incidents the custodian has established a new policy to lock the main entrance doors very soon after classes start and again directly after dismissal. (31)

Personalization and Ownership concerns, in particular, encouraging ownership of school grounds, as well as providing opportunities self-expression within the school, are perceived to have an impact on Student Social Development.

- The perceived lack of neighborhood quality illustrated by lack of ownership of the school grounds is seen as potentially effecting student attitudes and behavior that may hinder social development. (Schools# 25, 31, 32, 138, 142)

- Within the school however, teachers and students are capable of personalizing their space and have gained a strong sense of ownership in their school. Students learn the importance of taking responsibility by sharing in classroom clean-up routines, helping with the hanging of wall displays, being involved in landscaping projects and other similar group activities outside of more formal instruction. (25, 31, 32, 138, 142)

- Students have few ways to personalize their area, as they may have been able to do when they had their own desk. The teachers try to compensate by placing students' work on the walls of the classroom and in the hallways of the school thereby instilling a sense of personalization and ownership on a larger scale (i.e.,'this is my classroom, this is my school'). (25, 31, 32, 138, 142)

- Where personalization and ownership qualities are clearly in view is at the main entrance lobby of each school. It is here where the life of the school is visually expressed with an abundance of slogans on the walls, posters announcing events, and flyers littered on waiting tables. (25, 31, 32, 138, 142)

- Teachers often personalize their instructional areas even though at first glance each area appears to have common features similar to others in the pod. Within guidelines established by teachers, there is evidence students have opportunities to personalize as well as take ownership in their instructional area. (25, 138)

- Within the school, teachers provide many opportunities for students to personalize their classrooms by displaying student work, and to take ownership of their school through participation in the Safeties, Plant Brigade, and other school service-related tasks.(31)

Aesthetics and Appearance concerns, in particular, a school's cleanliness, orderliness and character, are perceived to have an impact on Student Social Development.

- The appearance of the school, it's cleanliness, orderliness and character are believed by some teachers to influence student social development. The school building was perceived as influencing occupant and visitors' first impressions of the school. To teachers, a clean school equals an orderly school. Clean and shiny floors, fluorescent light strips that brightly shine without flickering, displays that are orderly and colorful, these are the symbols of a school that is on a progressive track toward excellence. The quality of aesthetics and appearance is perceived as instilling cultural awareness and pride in students as well as visitors to the school. Maintaining a positive appearance of the building reinforces personalization and ownership for not only its occupants, but for the community as well. (Schools# 25, 31, 32, 138, 142)

- The poor appearance of the building grounds and lack of visually attractive playground equipment in all schools in the study are seen by some working groups as having an influence on students' social development.(25, 31, 32, 138, 142)

Classroom Adaptability, in particular, concerns over open plan and self-contained classrooms are perceived to have an impact on Student Social Development.

- Open plan instructional areas are seen as having an affect on student social development. Managing class activities in an open space in a manner sensitive to other classes, limits the range of behavior and activities that can take place, such as music, dance, and other activities requiring movement of tables and chairs in the classroom. (Schools# 25, 31, 138, 142).

- The requirement to use tables for cooperative learning take up more room than the chairs once did. The inefficient layout and installation of new classroom computers in a few rooms that take up even more space. The tightness of space and of working groups does not provide students at times with enough of a work surface to do their work creating distractions and affecting the effectiveness of their work. (32)

Building Functionality concerns, in particular, handicapped accessibility, lack of adequately equipped outdoor playareas, and space for school-wide assemblies, are perceived to have an impact on Student Social Development.

- Concerning the issue of ADA Accessibility, several the working groups reasoned that although they did not have an physically disabled students, if they were to have one, accessibility issues might affect that student's ability to use the entire facility. Due to limited access to the school building, a physically disabled student would not able to participate in all the activities of the school, thereby limiting his or her social development. (Schools# 25, 31, 32, 138).

- The playground is interpreted by the working group as inadequately functioning to support teachers' efforts to organize constructive outdoor play, limiting opportunities for Student Social Development. (142)

- Currently, mismatches between building functionality and organizational activities in one school are perceived by teachers to be affecting social development. (142)

- The lack of space for school-wide assemblies limits opportunities for quality social interchange between a larger group of students, teachers and the community. (142)

Places for Social Interaction, in particular, concerns over adequate management of playgrounds and cafeterias and providing opportunities for informal social interaction in main lobby spaces, are perceived to have an impact on Student Social Development.

- The playground and the cafeteria are the two locations that students are free to express themselves and let off some energy. Even with teacher concerns over the lack of opportunities for constructive play, students find imaginative ways to make the playground their own. (Schools# 25, 31, 32, 138, 142)

- The most openly social place in all of the schools in the study is the main lobby and main office waiting area. It is this area that provides the liveliness, and rich informal social interaction throughout the day. This combination of areas is believed to support the social development of students. (25, 31, 32, 138, 142)

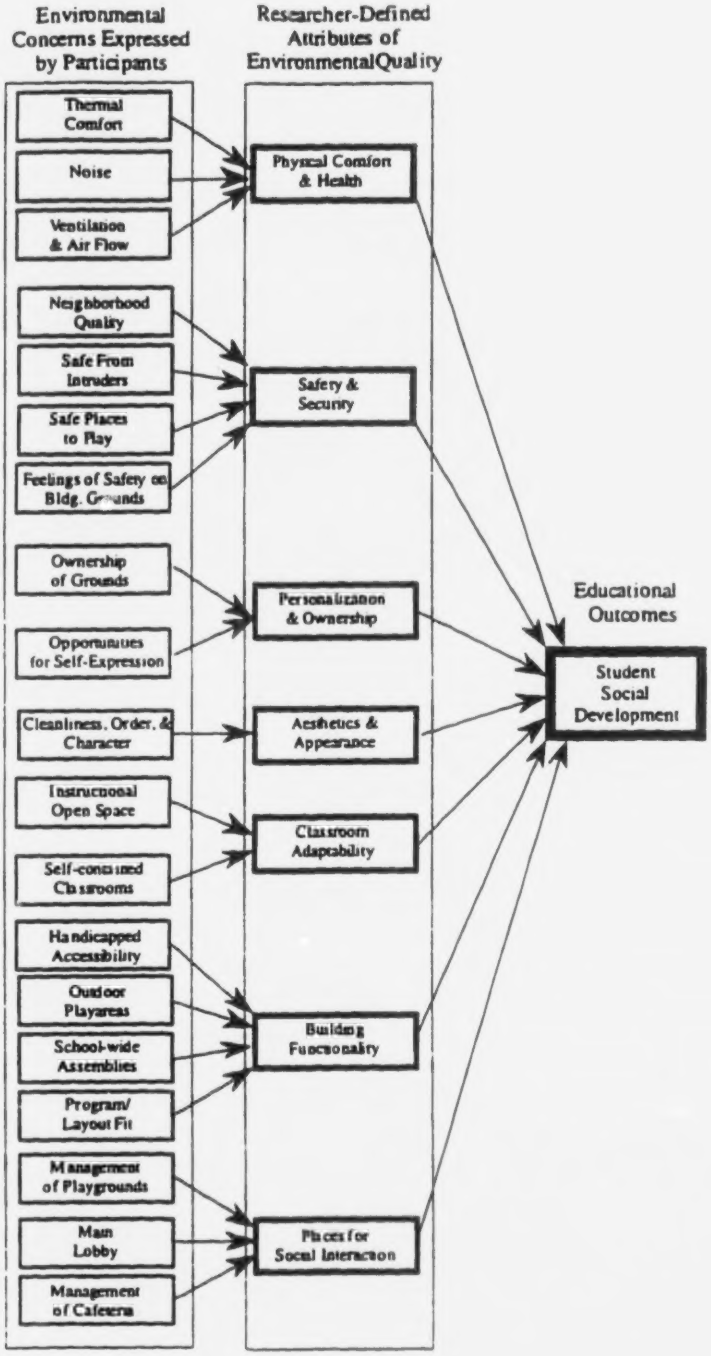
- The centralized location of the Commons serves as a true community forum. The Commons was observed as serving as a cafeteria, student meeting area, staff meeting space, community commons and informal social encounter space that believed to clearly support student social development. (25)

- Even though the underutilized library/media center is not programmed for any particular purpose, it has become an informal place for students from various classes to informally gather and socialize, and serves as a small group instructional area as well. One teacher has allowed her students to spill over into the unused space if they need more privacy for doing their work. (142)

- Shared lockers are seen as a place encouraging social development even though sharing may produce feelings of lack of privacy, and lack of personalization and ownership on the part of students. (142)

See Figure 8.2 on the following page which summarizes the teacher perceived impact of these attributes of environmental quality on student social development.

Figure 8.2
Perceived Relationships Between Environmental Concerns, Attributes of Environmental Quality and Student Social Development


Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of EnvironmentalQuality
Thermal Comfort
Noise
Ventilation & Air Flow
Physical Comfort & Health
Neighborhood Quality
Safe From Intruders
Safe Places to Play
Feelings of Safety on Bldg. Grounds
Safety & Security
Ownership of Grounds
Opportunities for Self-Expression
Personalization & Ownership
Educational Outcomes
Student Social Development
Cleanliness, Order, & Character
Aesthetics & Appearance
Instructional Open Space
Self-contained Classrooms
Classroom Adaptability
Handicapped Accessibility
Outdoor Playareas
School-wide Assemblies
Program/ Layout Fit
Building Functionality
Management of Playgrounds
Main Lobby
Management of Cafeteria
Places for Social Interaction

Environmental Quality and Teacher Instructional Performance

Within the context of the five schools in the study, the environmental quality attributes most often mentioned as having a perceived influence on Teacher Instructional Performance include: Physical Comfort & Health and Classroom Adaptability (See Figure 8.3). The environmental qualities of Safety & Security, Building Functionality were also identified as having a perceived influence on Teacher Instructional Performance, but were not mentioned as often. (Environmental qualities are listed in order of confidence of finding which is determined by the number of times a particular quality was mentioned by working groups across all schools in the study.)

Physical Comfort and Health concerns, in particular, thermal comfort, air flow and noise, are perceived to have an impact on Teacher Instructional Performance. (Each issue is ranked by the number of schools mentioning that issue. Schools identifying a particular issue are noted in parentheses.)

- At times, the lack of thermal comfort can affect a teacher's attitude, mood and motivation to instruct, and are believed to effect their performance. (Schools #25, 31, 32, 138, 142)
- Poor air flow circulation and ventilation were the main causes of concern for all schools. Even when the few operable second floor windows are opened, very little fresh air can be effectively circulated. These conditions may be contributing to air borne bacteria causing many health-related problems which may in turn have the potential of influencing Teacher Instructional Performance lost instructional time. (25, 31, 32, 138, 142)
- Problems with noise in open space instructional areas are identified by the working group as moderate priority that could have some influence on Teacher Instructional Performance. Constant distractions from neighboring classes can effect teacher mood and attitudes, and is believed to effect their instructional performance. (25, 142)

Classroom Adaptability concerns, in particular, the design and adaptability of both open plan and self-contained classrooms, and technological adaptability, and available display and storage space, are perceived to impact Teacher Instructional Performance.

- Open plan instructional areas are perceived to have an effect on Teacher Instructional Performance. In much the same way as with students, teachers are constantly distracted from noises and movement from other classes around them. These distractions are believed to decrease the effectiveness of their instruction. In addition, open instructional areas do not have enough wall space or chalkboard space. Some teachers compensate for the lack of wall space by hang posters from the ceiling, or placing displays over semi-transparent windows. (Schools #25, 31, 138, 142)

- Instituting a cooperative learning philosophy into the existing self-contained classrooms was seen as a welcome albeit challenging change for teachers with respect to classroom adaptability. A few teachers see these changes limit classroom flexibility impacting their instructional performance. All desks were replaced by classroom tables causing problems with the flexibility of classroom space: desks were seen by some teachers as providing more flexibility than bigger tables which took up the majority of classroom space. The classroom table issue impacted the ability of teachers in some cases to effectively conduct cooperative learning exercises that at times required free movement which is obviously difficult to do in a room occupied by tables. (32)

- There was some concern over the installation of the computers that resulted in a limited use of valuable bulletin board space in several classrooms. It appeared to the working group that the computers could be organized in such as way to limit the amount of direct wall space they occupied by grouping them back to back. This issue was seen as potentially effecting instructional performance. (32)

- Teachers mentioned wall hanging problems in warm weather as being one problem that often affected their instructional performance by forcing them to take time out of their planning to re-hang visuals, posters and student artwork. (32)

- Although teachers feel they have adequate storage, it is just not properly organized or managed as well as it could be. As a result, it is hard to conduct an inventory of books and supplies and there is no room for additional storage needs. Books and supplies stored in open instructional areas are routinely stolen or misplaced. (142)

Safety and Security concerns, in particular, concerns over poor neighborhood quality, feelings of safety, safety from intruders, and the securing of personal belongings, are perceived to have an impact on Teacher Instructional Performance.

- Due to poor neighborhood quality, an ever-present undercurrent of anxiety is created in the minds of many teachers. Perceived psychological safety on building grounds can have an affect on teachers' attitudes and moods. Bad experiences teachers bring into the school are believed to adversely effect their ability to focus on the task of teaching.(Schools #25, 31, 32, 138, 142)

- The physical state of the school and its grounds can also have a perceived effect on Teacher Instructional Performance. Locked and frosted windows constantly remind teachers of the surroundings. Stories of past intruders remind teachers of the lack of control they have at times even within the building. Although teachers feel psychologically safe within the building and often claim to be habituated to the situation, an ever present concern for their safety and the safety of their students pervades their day and is every so often heightened by new events that may impact them directly. These feelings, they argue, indirectly affect their performance by distracting them from their immediate task of teaching. (25, 31, 32, 138, 142)

- Although recent steps have been taken by the school to cut down on intruders, teachers in the working group are very aware of the intruder safety problem on their ability to focus on the instructional need of their students.(31, 138)

- Security concerns over teachers' locked storage is believed to serve as a distracter on a teacher's ability to focus on instruction. Teachers should not have to worry about whether his or her personal belongings are secure or not. (31, 32, 138, 142)

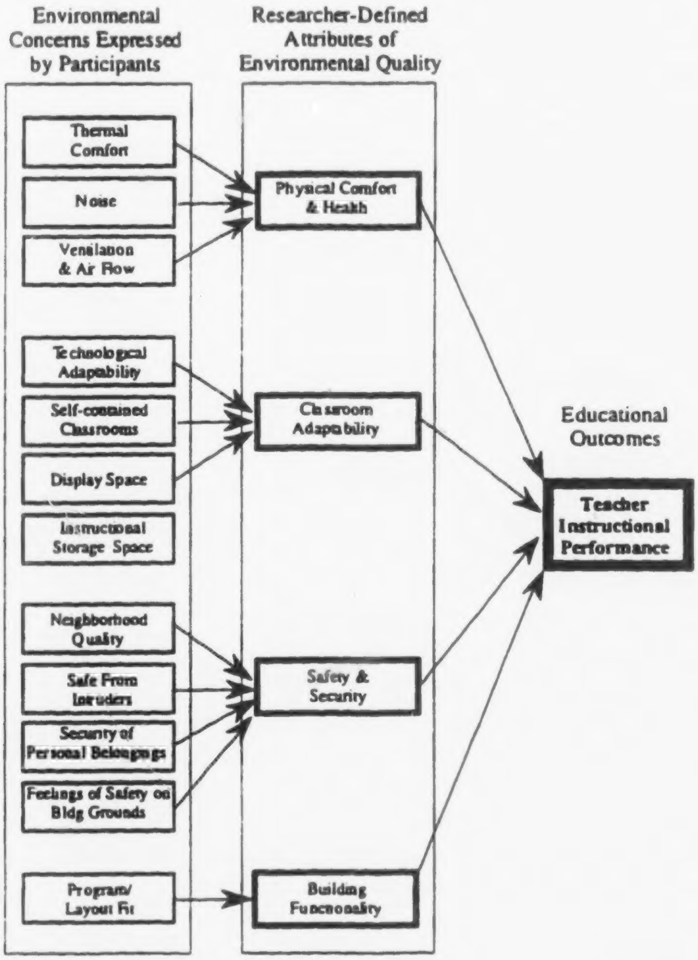
Building Functionality concerns, in particular, concerns over mismatches between building layout and educational programs, are perceived to have an impact on Teacher Instructional Performance.

- Currently, mismatches between building functionality and organizational activities in one school are perceived by teachers to be affecting their own performance. Due to the influx of outside community agencies in the school, created as a result of a community school vision, open-plan instructional space has been compromised decreasing the availability of space for instruction. (School# 142)

- Teachers feel their performance suffers when supportive instructional spaces have not been managed well: they must cope with an abandoned library/ media center, unorganized centralized storage rooms, a crowded administration area, and directing lost parents who cannot find their student's classroom.(142)

Figure 8.3 below summarizes the teacher perceived impact of these attributes of environmental quality on student social development.

Figure 8.3
Perceived Relationships Between Environmental Concerns, Attributes of Environmental Quality and Teacher Instructional Performance


Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of Environmental Quality
Thermal Comfort
Noise
Ventilation & Air Flow
Physical Comfort & Health
Technological Adaptability
Self-contained Classrooms
Display Space
Instructional Storage Space
Classroom Adaptability
Neighborhood Quality
Safe From Intruders
Security of Personal Belongings
Feelings of Safety on Bldg Grounds
Safety & Security
Program/ Layout Fit
Building Functionality
Educational Outcomes
Teacher Instructional Performance

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Generalizing From the Local: The Relationship between Environmental Quality Concerns and Student Academic Performance

One of the goals of action research is to develop a global theory along side the local theory being developed in local context. The reader is encouraged to refer back to the cogenerative model of participatory action research in Chapter 3 (Figure 3.1). In the process of developing a new shared framework between participants a new general theory is developed alongside the testing of the local theory through collective action. This section offers one attempt to generalize from the local context in order to contribute to the global knowledge about school environments. The findings are tenative and only suggestive, but with additional research the strategy of comparing across local contexts holds some promise.

Of interest to some stakeholders in the larger research project was the exploration of the relationship between environmental quality and educational outcomes. From the data collected in the workshops, it was possible to test whether or not there was a relationship between the number of environmental concerns expressed in each school and the overall academic performance within each school.

Table 8.4 on the following page summarizes the data with respect to the number of high-priority environmental concerns, and a score of student knowledge as a percentage of improvement from 1993 to 1995 (data taken from the Maryland School Performance Program Report, 1995, see Appendix C). The student knowledge score is an aggregate score combining all six separate knowledge categories (reading, math, social studies, science, writing, and language usage) and both 3rd and 5th grade percentage improvements from 1993 to 1995. Due to incomplete data for all knowledge categories, Table 9.1 indicates an averaged aggregate student knowledge improvement score for each case.

The number of high-priority environmental concerns were counted and then correlated with student knoweldge improvement scores using a simple Pearson correlation. This final score was correlated with the number of high-priority environmental concerns as illustrated in Figure 8.4. A significant relationship is observed ($r= -.81$, $p=.01$). Although this

Table 8.1
Data Set Comparing High-Priority Environmental Concerns and Percentage of Student Knowledge Improvement

			School Case		
	School A	School B	School C	School D	School E
No. of High-Priority Environmental Concerns	5	7	8	8	18
Student Knowledge % Improvement from 93-95 (Total)	+136.0	+91.8	+68.0	+4.8	-64.0
Student Knowledge % Improvement from 93-95 (Averaged)	+22.67	+15.30	+11.33	+0.80	-10.67

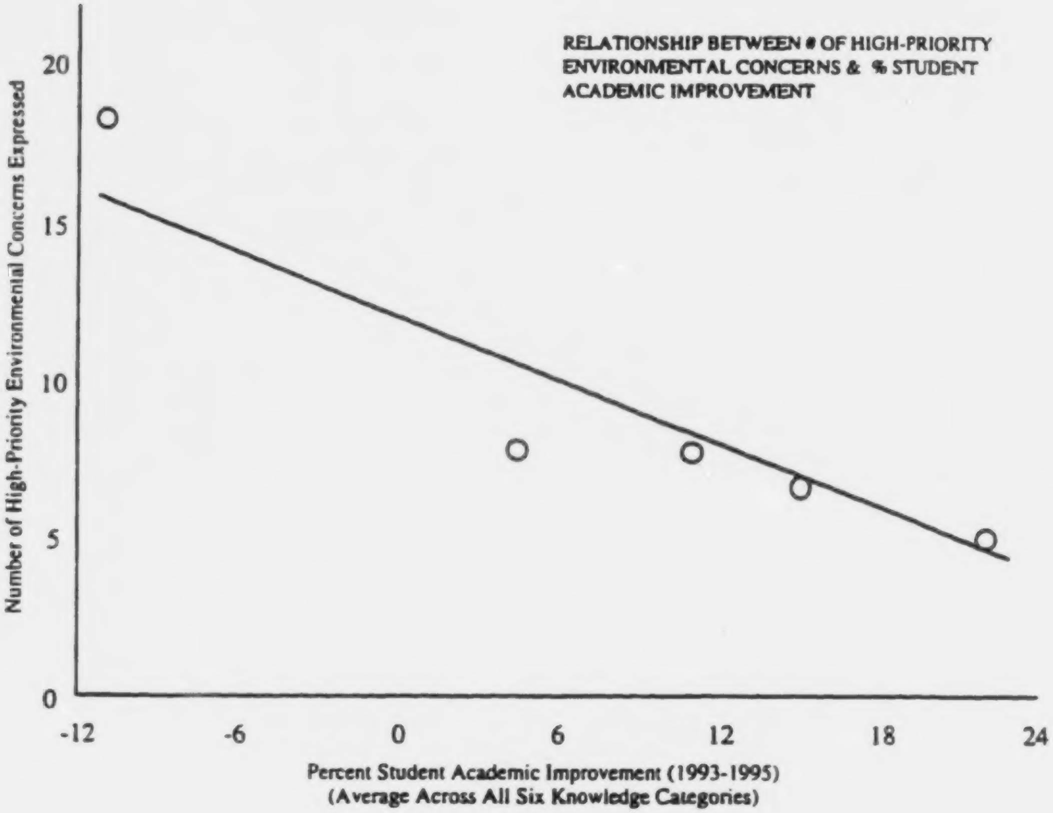

Figure 8.1
Relationship Between Number of High-Priority Environmental Concerns and Percentage of Student Academic Improvement

study is exploratory, the sample of schools is small, and the correlation does not suggest a causal relationship, there does appear to be an emerging pattern between environmental quality and educational outcomes.

As suggested at the beginning of this section, it would be premature to assume that this relationship will hold universally. The main intent of showing this finding is to indicate the potential of generalizing from local knowledge grounded in action research.

The perceived impact of environmental quality on educational outcomes varies depending on the outcome investigated. Student academic performance is perceived by teachers to be impacted by as many as six environmental quality attributes, while student social development is impacted by as many as seven, and teacher instructional performance by only four. This conclusion is based in the finding that not all environmental concerns were seen as being as influencial as others. The problems of open space classrooms and the concerns over physical comfort and health and classroom adaptability are believed to be much more of a concern for teachers than other attributes of environmental quality and therefore were believed to have the greatest effecte all educational outcomes. On the other hand, places for social interaction and concerns over personalization and ownership were of concern to teachers, but not necessarily impacting every educational outcome. In other words, teachers did not in any case resort to suggesting that they believed that every concern was related to every outcome. Teachers had the ability to make educated distinctions and to formulate reasons why they believed that various environmental qualities had the impacts they did.

CHAPTER 9

PLACE MANAGEMENT: THE PERCEIVED RELATIONSHIP BETWEEN PLACEMAKING AND EDUCATIONAL OUTCOMES

The lack of responsive facility management services, deferred maintenance policies, and the lack of operating funds to maintain and operate, update and modernize existing school buildings is clearly detrimental to learning and teaching (GAO, 1995; Goldberg & Bee, 1991; OECD, 1989). In a period when school districts across the country are once again gearing up for major construction projects, the argument for the funding of on-going facility management in existing schools is just as, if not more critical than, the design of new schools. The activities of management by their very nature involve the monitoring, maintaining, and continuously improving the fit between the learning environment and current and as yet unknown future educational philosophies, programs and demographic realities that new designs can only partially anticipate.

As school organizations continue to change, buildings must be eminently manageable in accommodating those changes. 'Flexible' school designs capture only half of the solution. Management strategies need to be articulated in which the realities of managing organizational change, not just physical buidling systems in schools are accounted for.

The site-based management reform movement provides an opportunity for schools to take control of the management of their facilities. This is an aspect of the role of school leaders which is "often neglected but where they can make a significant contribution to the life of the institution . . . in so far as they lead to greater job satisfaction and better running of the establishment they can be welcomed as contributing to the quality of schooling" (OECD, 1989; 122).

Findings from this study suggest that facility management is perceived by educators to be as much their responsibility and the responsibility of students and the neighboring community as it is the manifest responsibility of building maintenance professionals serving them. Further, facility management is perceived by educators to influence the quality of their school environment and contribute to the success of their teaching and their students' learning.

Invisible to the public eye, public schools across the country have for years had to 'make due' with their facilities as is. Schools have been creative in efforts to maintain and improve the environmental qualities of their schools, sometimes in spite of centralized facility maintenance programs of the 'Main Office'. This informal process of environmental change — or 'placemaking' — has long been overlooked as a legitimate process of people constructing place-based knowledge and meaning within the places they live, work and play. Placemaking can be seen as the act of transforming places "in which we find ourselves into places in which we live" (Schneekloth & Shibley, 1995; 1).

By necessity, educators have had to take control over events and circumstances that occur in their schools. They have not been able, for a variety of reasons, to count on professional placemakers such as architects, planners and facility managers and engineers to assist them in the activities of placemaking. The present environmental situation educators find themselves is unfortunate, but this situation provides unique opportunities for recognizing placemaking in schools as a common everyday activity that can occur with and without the guidance of professionals. From this recognition comes the task of finding innovative ways to support and further enable these informal placemaking activities in schools that continue well beyond the shine and glimmer of new school construction. This chapter documents the activities of various placemakers in the school from the perspective of environmental quality management.

Placemaking in Schools

The concept of placemaking, within the context of this study refers to the maintenance of environmental qualities over time through the actions of various occupant and professional placemakers (See Table 9.1). The checkmarks indicated in the body of Table 9.1 tabulate data gathered through the interviews and workshops of persons that, with the exception of administrators, teachers believe have some role or responsibility for addressing the particular environmental quality attribute of concern. Checkmarks indicated in the administrator column are self-reported by principals during initial interviews.

Table 9.1
The Influence of Placemakers on Attributes of Environmental Quality

Environmental Quality	The 'Placemakers'				
	Administrators	Custodians	Teachers	Students	Community
Physical Comfort & Health	√	√			
Classroom Adaptability			√		
Safety & Security	√	√			√
Building Functionality	√				
Aesthetics & Appearance	√	√	√	√	√
Personalization & Ownership	√	√	√	√	√
Social Places			√		
Privacy			√		
Sensory Stimilation			√	√	
Crowding/ Spaciousness	√				

Principal as Placemaker

> *Ms. Kavelaris remarks, that she deals with facility management issues "more than I want. I don't want to talk about panic bars, to me that's not exciting, but I know its in my purview. But, I'd like it to be dealt with and be gone so that our focus can be just on academics. So, I'm not happy when I have to make a case about something we expect to be working and its not working." She estimates that her attention to facility management issues may account for as much as 10 to 15% of her workload as principal.*

The principal acts as a facilitator of placemaking activities in the school. Physical comfort and health, safety and security, and aesthetics and appearance issues are more often than not the prinicipal's main concern due to their immediacy to public scrutiny. Alleviating problems with crowding and spaciousness in classrooms is a responsibility of the prinicipal and systems administrators, and teachers understand that they must find ways to live with the realities of ever changing demographics. Environmental qualities of building functionality and classroom adaptability, sensory stimulation, places for social interaction, privacy are qualities principals feel they must monitor, but recognize that they are under the day-to-day influence of teachers and staff. Principals recognize their lead role in keeping students, staff, teachers and the community aware of the need and importance of not only maintaining their school environment but proactively creating exciting and motivational places for learning. Some prinicipals are more proactive than others in these efforts, but all recognize they can only do so much and that everyone must take ownership in their school.

(In the tables that follow note that there is no flow chart for administrators since they did not participate in the workshops and therefore there is no data available to link their self-reports to specific environmental concerns).

Custodian as Placemaker

> *Mr. Spearing, wanting to proactively address teacher needs and concerns, developed a "customer response form" placing copies of the form in each teacher's mailbox to encourage their feedback on problems that they might have related to the physical environment of their school. Soon he was addressing problems of needing heat, supplying bathrooms, setting clocks, fixing running sinks, coaxing Ms. Johnson's uncooperative audio-visual screen, repairing a damaged outlet in Ms. Bennick's room, adjusting legs on a classroom table, replacing duct tape used to conceal computer network wires running along the floor of the computer room that children keep tripping over, air ventilation, fixing a stuck door outside the boys bathroom, replacing flickering fluorescent lights in Ms. Henderson's classroom, reserving the VCR for a Mr. Jennings, installing a pencil sharpener in Ms. Leadbetters classroom, repairing a broken top drawer of Ms. Hopper's desk and fixing a damaged puzzle rack in Ms. Anger's room, replacing the intercom speaker switch, and repairing a rug at the entrance of Ms. Blackmore's room. These activities add up to more than a well-maintained school facility, as one teacher who filled out Mr. Spearing's customer response form exclaimed, "I am happy to have you as my personal custodian."*

Mr. Spearing's contribution to building and maintaining the educational "stage" at School #25 speaks for itself. The contribution of custodians in providing a stage set for education is often overlooked and underrated. Custodians are truely the 'guardians' and 'protectors' of the school as a place and are the most ubiquitous placemakers. An across case analysis reveals that facility management services are perceived by school occupants as having a critical role in both maintaining and improving several of the environmental qualities identified by working groups in the study: physical comfort & health, safety & security, aesthetics & appearance and personalization & ownership. What follows are some examples of the role of facility management with respect to these four environmental qualities.

Bernard, the head custodian at School #32 takes very seriously his company's motto "to meet and exceed the expectations of the customer," and for him, that means making sure floors are shining, trash is emptied, rugs are vacuumed, chalktrays are cleaned, making best use of the most innovative products on the market, and engaging in intensive staff training aimed at continuous improvement. A teacher from the working group was insistent about the custodial care explaining, "The floors sparkle...the custodians work very hard [and] meet my needs, they're wonderful. The school is attractive to students and people who come in [and] the staff has done everything they can do to keep it attractive."

The custodian at School #138 is keenly aware of thermal comfort problems and tries to alleviate them for teachers however he can. When it gets warm, the custodian will unlock the windows to get some relief to a localized part of the building. Even when the custodian opens a window, however, one teacher located further in the interior of the building remarks, "If there is a nice breeze coming through the window I can't feel it."

One custodian at School #142 echoes the concerns of teachers, "Cleanliness is the most important thing," he says. "At first, bathrooms smelled so bad, it was so distracting...there was trash in the hall due to no trash cans...it took six months for me to be in total control of what I wanted to do here."

Due to several recent thefts by intruders, the Team Leader Ervin, the custodian at School #142, has established a new policy to lock the main entrance doors soon after classes start and again directly after dismissal. In addition, the custodial and maintenance staff has taken a number of steps to decrease the likelihood of unwanted intruders, as well as building and car break-ins and graffiti. Three security cameras were installed on the outside of the building by the maintenance staff in the past year. Ervin makes rounds around the building at regular intervals throughout the day to make sure exit doors are indeed locked from the outside. Refering to safety, he proudly remarks that there have been no safety accidents in the school since he has been there.

Ms. Grafton, principal of School #25 states, "They have kept up the grounds much better now...these guys get out every morning and do it over and over...its a problem still but there seems to be some recognition from the community." She continues to explain that with the help of her custodial staff, the school was instrumental in cleaning up the city alley all the way to Milton Avenue. The custodian explained that there was glass everywhere, but now that is under control. "Its the first thing visitors look at," he says.

Referring to the upkeep of the building grounds, Ms. Blake a teacher at School #25 says it is a never-ending battle, but one the custodial staff feels is well worth the effort. She remarks, "They are in competition with crime," when it comes to keeping the school grounds safe and clean. The custodians have taken ownership and added their own personal touch to their placemaking activities: reparing bushes damaged by neighborhood residents, painting trim, railings and manhole covers, and ritualistically removing graffitti every day if necessary. According to the parent liaison, as a result of the efforts made by the custodial staff, some in the community have actually begun to take notice of the school's determination to maintain a positive appearance.

Many of the five working groups agreed that the interior of their school buildings are clean, inviting, and well maintained. As one teacher at School #138 remarked, "Looks well for the most part...the inside of the building? I would invite the President over!"

In addition to these environmental qualities, the Ervin, custodian at School #142 acts as a role model and mentor for the students. Ervin's official responsibilities are blurred by his involvement with the students: "I look out for them...I like to tell them my story whenever I can." In a way, "Mr. Ervin," as the students call him, serves as a makeshift authority figure for students.

The Impact of Custodian Placemakers (Facility Management) on Educational Outcomes

Following the previous investigator's analysis and conclusions relating attributes of environmental quality to educational outcomes (Figures 8.1, 8.2 & 8.3), the following three

Figure 9.1
Perceived Relationships Between Facility Management, Environmental Concerns, Attributes of Environmental Quality and Student Academic Performance

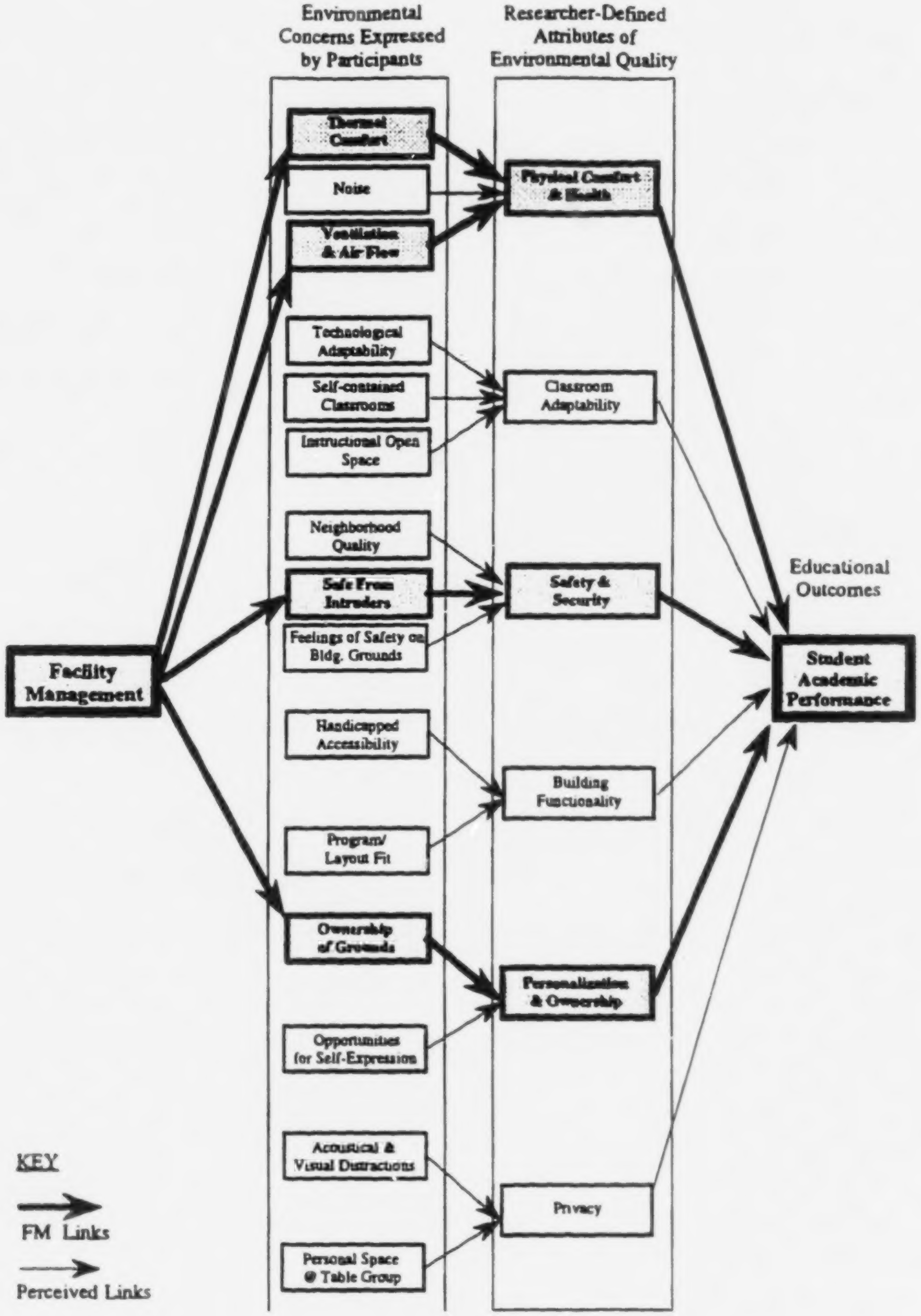
Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of Environmental Quality
Thermal Comfort
Noise
Ventilation & Air Flow
Physical Comfort & Health
Technological Adaptability
Self-contained Classrooms
Instructional Open Space
Classroom Adaptability
Neighborhood Quality
Safe From Intruders
Feelings of Safety on Bldg. Grounds
Safety & Security
Facility Management
Educational Outcomes
Student Academic Performance
Handicapped Accessibility
Program/ Layout Fit
Building Functionality
Ownership of Grounds
Personalization & Ownership
Opportunities for Self-Expression
Acoustical & Visual Distractions
Personal Space @ Table Group
Privacy
KEY
FM Links
Perceived Links

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Figure 9.2
Teacher Perceived Relationships Between Facility Management, Environmental Concerns, Attributes of Environmental Quality and Student Social Development

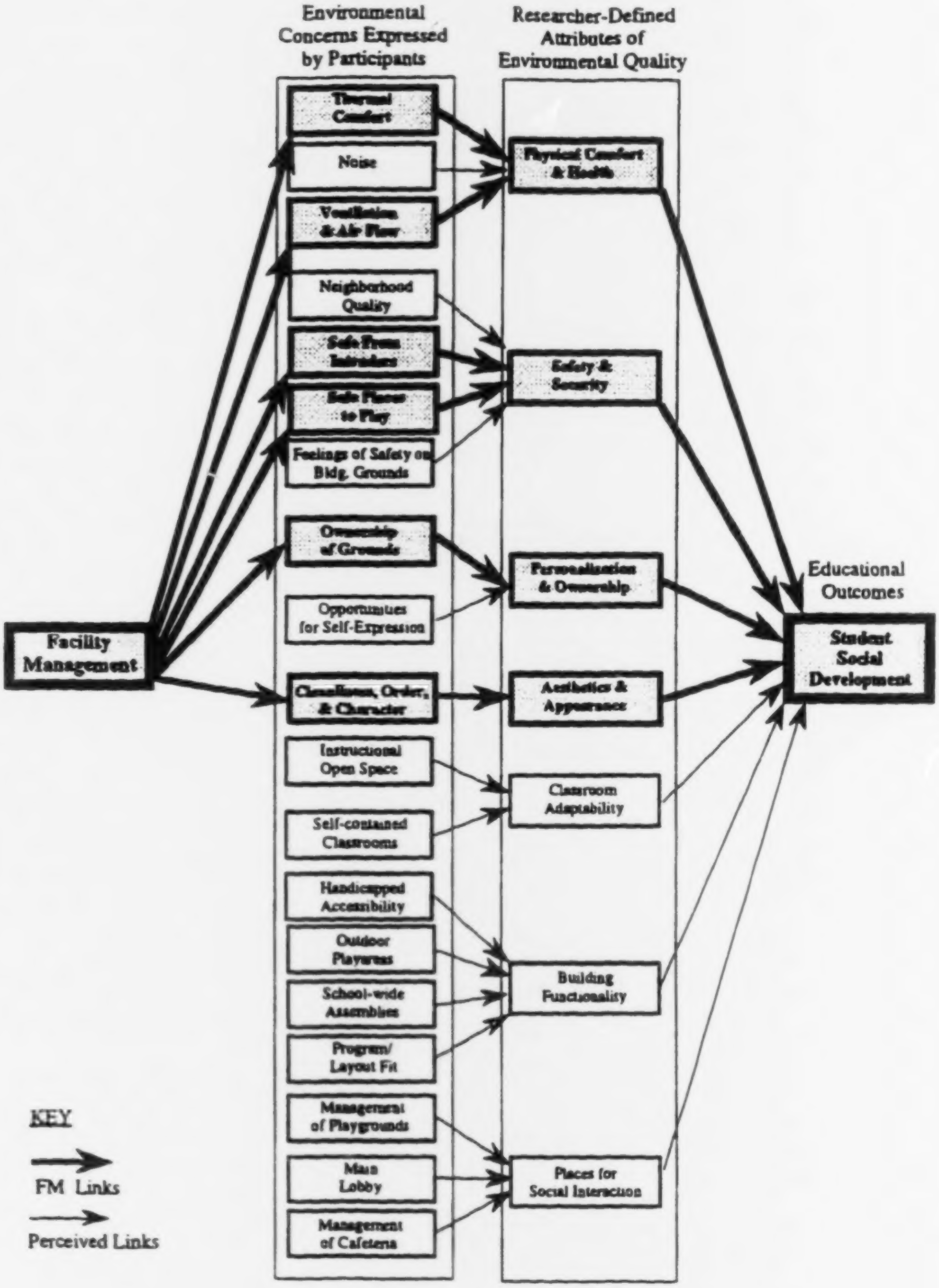
Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of Environmental Quality
Thermal Comfort
Noise
Ventilation & Air Flow
Neighborhood Quality
Safe From Intruders
Safe Places to Play
Feelings of Safety on Bldg. Grounds
Ownership of Grounds
Opportunities for Self-Expression
Cleanliness, Order, & Character
Instructional Open Space
Self-contained Classrooms
Handicapped Accessibility
Outdoor Playareas
School-wide Assemblies
Program/ Layout Fit
Management of Playgrounds
Main Lobby
Management of Cafeteria
Physical Comfort & Health
Safety & Security
Personalization & Ownership
Aesthetics & Appearance
Classroom Adaptability
Building Functionality
Places for Social Interaction
Facility Management
Educational Outcomes
Student Social Development
KEY
FM Links
Perceived Links

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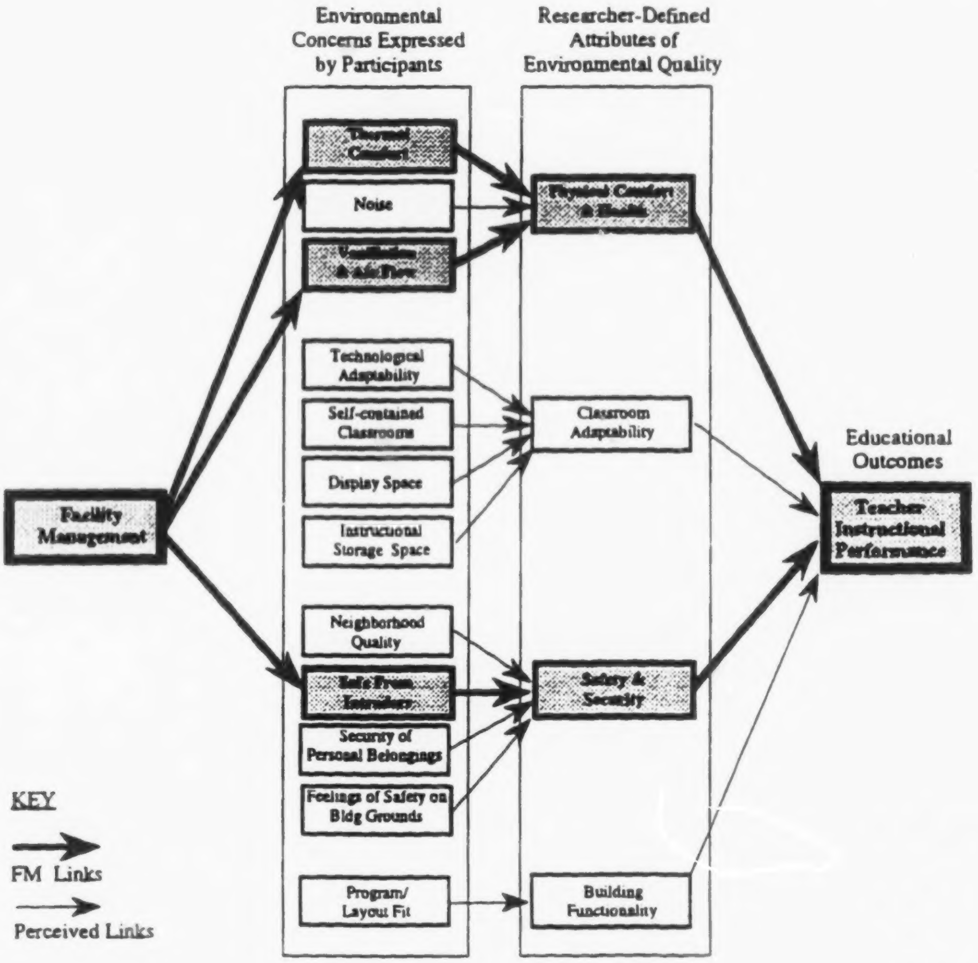
Figure 9.3
Teacher Perceived Relationships Between Facility Management, Environmental Concerns, Attributes of Environmental Quality and Teacher Instructional Performance


Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of Environmental Quality
Educational Outcomes
Thermal Comfort
Noise
Ventilation & Air Flow
Technological Adaptability
Self-contained Classrooms
Display Space
Instructional Storage Space
Neighborhood Quality
Safe From Intruders
Security of Personal Belongings
Feelings of Safety on Bldg Grounds
Program/ Layout Fit
Physical Comfort & Health
Classroom Adaptability
Safety & Security
Building Functionality
Facility Management
Teacher Instructional Performance
KEY
FM Links
Perceived Links

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figures (Figures 9.1, 9.2 & 9.3) illustrate teacher perceptions of the impact of custodians as facility managers on educational outcomes through environmental concerns expressed by teacher working groups and participants and attributes of environmental quality. Custodians, as stated in Table 9.1, are perceived by teachers to influence the environmental qualities of physical comfort and health, safety and security, aesthetics and appearance, and personalization and ownership.

Teachers as Placemakers

> *The open space on the second floor of School #142, shared by the Coleman Center and Marshall Academy, has become cluttered, incoherent and unorganized mix of classes surrounded by partitions resembling war bunkers. There are make-shift dividers employed to identify the boundaries of the classroom: high desks, tall charts, bookshelves left from the library/media center, modular plastic shelving and remnants from a 1950s office partitioning system bought at the local office supply store a few years back.*

Even with the myriad of problems and concerns that custodians deal with on a daily basis, many environmental problems remain that educators do not hold them responsible for. In addition, educators are often not always collectively aware of the problems they face or how to address them once these problems are called to their attention.

Teachers feel they have the ability to affect a wide range of environmental qualities within their classroom such as sensory stimulation, aesthetics and appearance, personalization and ownership and providing places for social interaction. Teachers are expert at creating student work displays within classrooms and in corridors, placemaking activities which are seen as directly linked to providing a positively visually simulating environment for learning as well as providing students with a sense of ownership in the school. Efforts to help students personalize their classroom spaces and lockers are also an area that teachers feel they have a responsibility over. Table groups versus personal desks and a lack of personal lockers have made this activity much more difficult. The placemaking activity of cleaning the classroom is a responsibility that teachers hold themselves, their students and even their fellow teachers to. Finally arranging classrooms for distinct places for social interaction between students is a challenging task due often to the shortage of available space.

Teachers feel that some environmental qualities are in part their responsibility even if they are unable to control them such as issues of privacy and classroom adaptability. Providing a place for students who need privacy can be a difficult problem in classrooms designed solely for large group instruction. Teachers are unable to find opportunities for individualized student learning spaces within their classrooms. At the most mundane level a time-out desk may be situated in a corner of the room to manage a disruptive student.

Two critical environmental qualities that are of concern with most working groups in the study are classroom adaptability and building functionality. Some examples of these problems follow.

Teachers in School #32 (with traditional eggcrate classrooms) feel that implementing the cooperative learning philosophy physically within their classroom with specific areas or corners for math, writing, art and science is difficult, if not impossible, even though they were given a short in-service instruction course on how to layout their classrooms to fit the philosophy.

One of the highest priority issues identified by teachers in the study were problems with open space. Although most admitted that open space promotes collegiality among teachers, noise and distraction continue even with the recent purchase of new portable bulletin boards in School #138. A previous principal at School #138 enforced a strict policy of openness and would not allow any partitions or dividers at all; they are all very appreciative of the efforts of the present principal to address their concerns over open space.

Probably the most complex problem that teachers are concerned with is the distraction caused by open instructional space. School #142 provides an example of this problem. In addition to the typical problems of open space areas (visual and auditory distractions for teachers and students) these areas are inefficiently laid out and organized, obstructed by structural columns and do not provide nearly enough wall space, or enough floor area for activity centers. There seems to be no correspondence between the size, shape and configuration of the makeshift classrooms and the educational activities that are contained within them.

Problems of classroom adaptability and building functionality are not perceived by educators as areas where facility management has any expertise, rather they feel these qualities should be their responsibility. However, the findings indicate that teachers in these schools do not seem to have the expertise to address them either, leaving many unanswered questions of how to address many of these problems.

The Impact of Teacher Placemakers on Educational Outcomes

Following the previous investigator's analysis and conclusions relating attributes of environmental quality to educational outcomes (Figures 8.1, 8.2 & 8.3), the following three figures (Figures 9.4, 9.5 & 9.6) illustrate teachers' perceptions of the impact of teachers as placemakers on educational outcomes through environmental concerns expressed by participants and attributes of environmental quality. Teachers, as stated in Table 9.1, are perceived to influence the environmental qualities of classroom adaptability, aesthetics and appearance, personalization and ownership, places for social interaction, privacy, and sensory stimulation.

Figure 9.4
Teacher Perceived Relationships Between Teacher Placemakers, Environmental Concerns, Attributes of Environmental Quality and Student Academic Performance

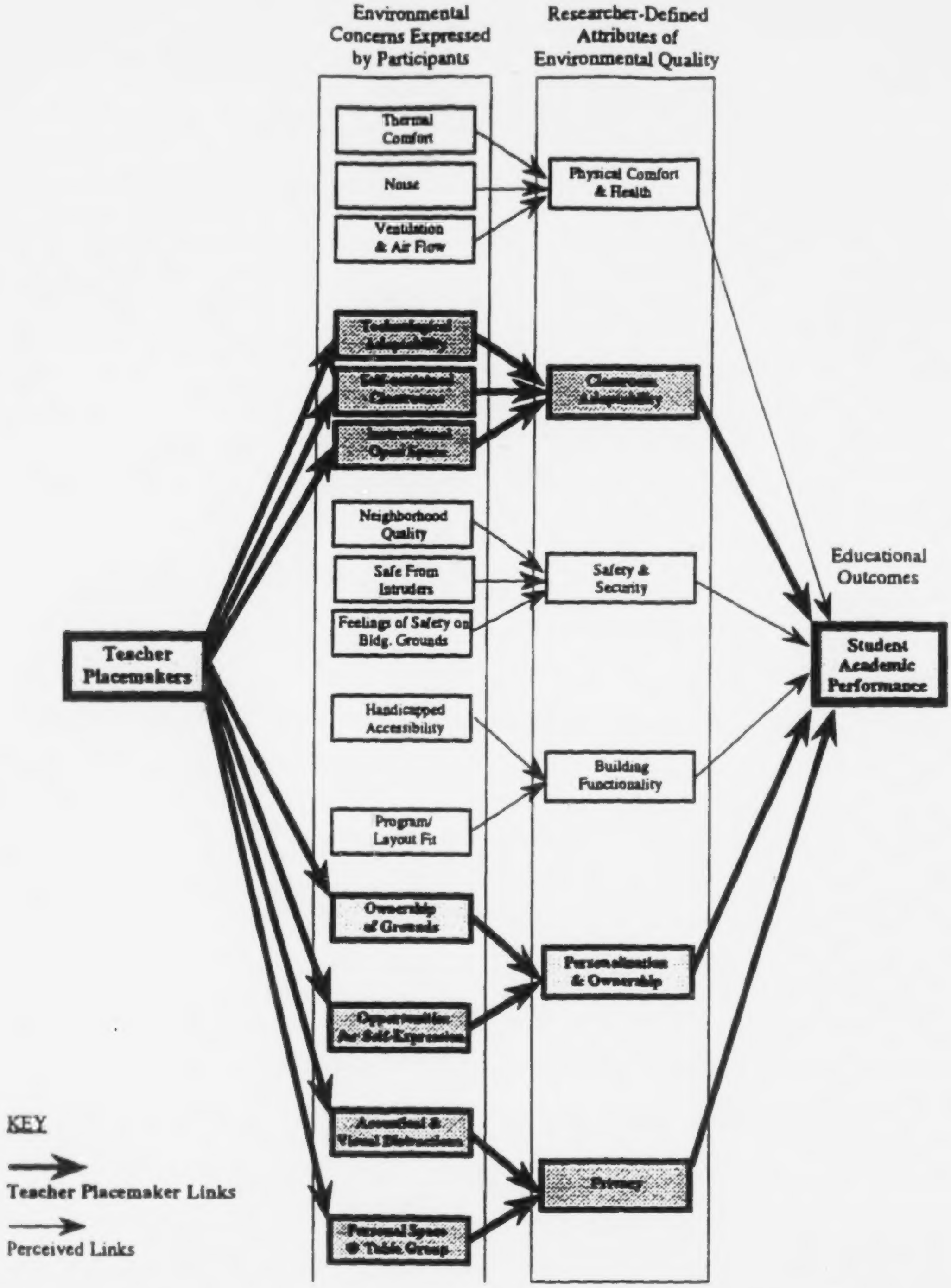
Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of Environmental Quality
Thermal Comfort
Noise
Ventilation & Air Flow
Physical Comfort & Health
Technological Adaptability
Self-contained Classrooms
Instructional Open Space
Classroom Adaptability
Neighborhood Quality
Safe From Intruders
Feelings of Safety on Bldg. Grounds
Safety & Security
Educational Outcomes
Teacher Placemakers
Student Academic Performance
Handicapped Accessibility
Building Functionality
Program/ Layout Fit
Ownership of Grounds
Personalization & Ownership
Opportunities for Self-Expression
Acoustical & Visual Distractions
Privacy
Personal Space @ Table Group
KEY
Teacher Placemaker Links
Perceived Links

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Figure 9.5
Teacher Perceived Relationships Between Teacher Placemakers,, Environmental Concerns, Attributes of Environmental Quality and Student Social Development

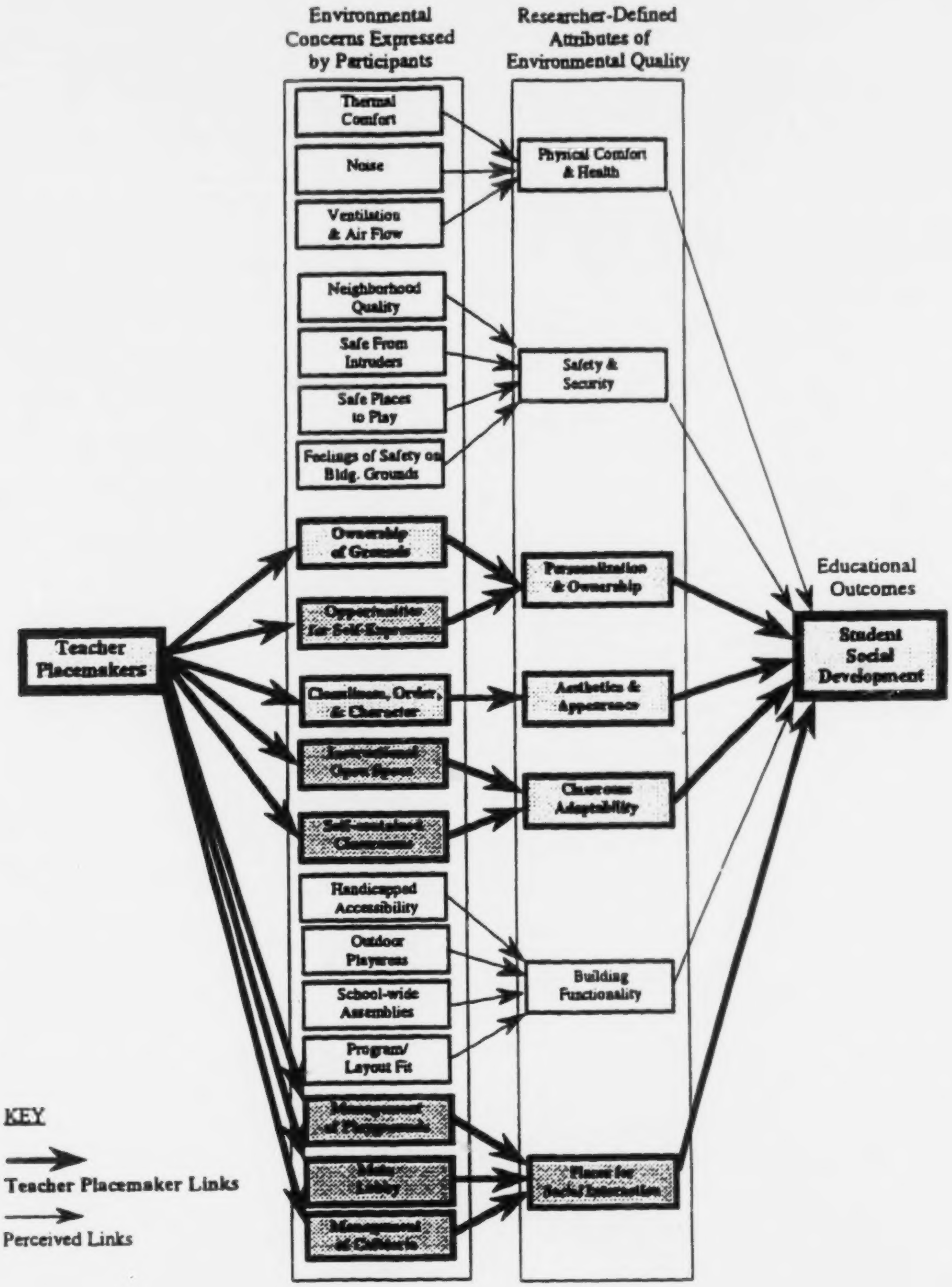
Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of Environmental Quality
Thermal Comfort
Noise
Ventilation & Air Flow
Physical Comfort & Health
Neighborhood Quality
Safe From Intruders
Safe Places to Play
Feelings of Safety on Bldg. Grounds
Safety & Security
Ownership of Grounds
Opportunities for Self-Expression
Personalization & Ownership
Educational Outcomes
Teacher Placemakers
Student Social Development
Cleanliness, Order, & Character
Aesthetics & Appearance
Instructional Open Space
Self-contained Classrooms
Classroom Adaptability
Handicapped Accessibility
Outdoor Playareas
School-wide Assemblies
Program/ Layout Fit
Building Functionality
Management of Playgrounds
Main Lobby
Management of Cafeteria
Places for Social Interaction
KEY
Teacher Placemaker Links
Perceived Links

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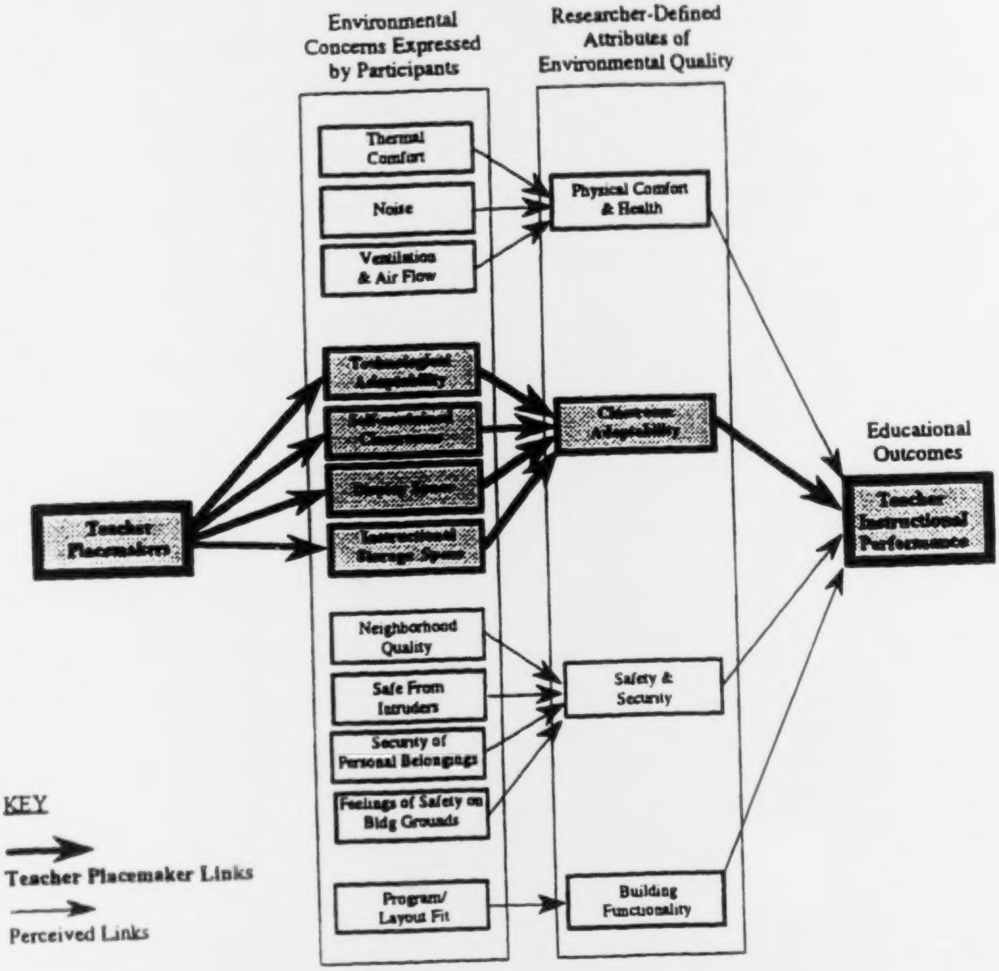
Figure 9.6
Teacher Perceived Relationships Between Teacher Placemakers,, Environmental Concerns, Attributes of Environmental Quality and Teacher Instructional Performance


Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of Environmental Quality
Thermal Comfort
Noise
Ventilation & Air Flow
Physical Comfort & Health
Technological Adaptability
Self-contained Classrooms
Display Space
Instructional Storage Space
Classroom Adaptability
Teacher Placemakers
Educational Outcomes
Teacher Instructional Performance
Neighborhood Quality
Safe From Intruders
Security of Personal Belongings
Feelings of Safety on Bldg Grounds
Safety & Security
Program/ Layout Fit
Building Functionality
KEY
Teacher Placemaker Links
Perceived Links

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Students as Placemakers

> *Students, when asked about what they like most about their school they often mention the "colorful decorations on classroom and corridor walls" which they have had a big hand in making. One student in School #138 reminded her fellow student, who was tearing at a student work display, "Don't do that! What if that was your project, would want someone rippin' at it?" The transgressing student stopped his vandalizing behavior immediately.*

Students are involved in placemaking as well. They can have a direct impact on the aesthetics and appearance and sensory stimulation of their school through their own project work which is often displayed through the school. Students identify most with their classrooms and their personalized work displays.

Students are often called to take ownership of their school as well. Teachers remind their students that at home they are required to keep their room clean and to pick up after themselves, and in school the same rules apply. The only problem Ervin, the custodian at School #142, has now is, "kids throwing trash on the grounds," but he is patient with them stating that "Sometimes they have no place to put trash so they put it on the ground." Instead, he tries to instill a sense of responsibility in the students to take pride in their school. Very often, young students naturally take ownership of their school and even learn the values of ownership from each other as in the vignette that opens this section.

Students have even helped with the cleaning of the school grounds. One teacher defending School #138's custodian, remarked, "I used to have a group of kids that would come out and clean up two or three days of the week, we'd go out in the morning just to help the custodians who couldn't do all of this. Besides reactive activities of cleaning the grounds, one school — School #142 — has involved students in the planning and maintainance a garden on school grounds as well as planting trees as part of a science project.

Finallly, students have a tendancy to create small places within classrooms in attempts at privacy, and often find fun places to hang-out on the school grounds in creating informal places for social interaction outside the surveillance of the school staff.

The Impact of Student Placemakers on Educational Outcomes

Following the previous investigator's analysis and conclusions relating attributes of environmental quality to educational outcomes (Figures 8.1, 8.2 & 8.3), the following three figures (Figures 9.7, 9.8 & 9.9) illustrate the perceived impact of students as placemakers on educational outcomes through environmental concerns expressed by participants and attributes of environmental quality. Students, as stated in Table 9.1, are perceived to influence the environmental qualities of aesthetics and appearance, personalization and ownership, sensory stimulation.

Figure 9.7
Teacher Perceived Relationships Between Student Placemakers, Environmental Concerns, Attributes of Environmental Quality and Student Academic Performance

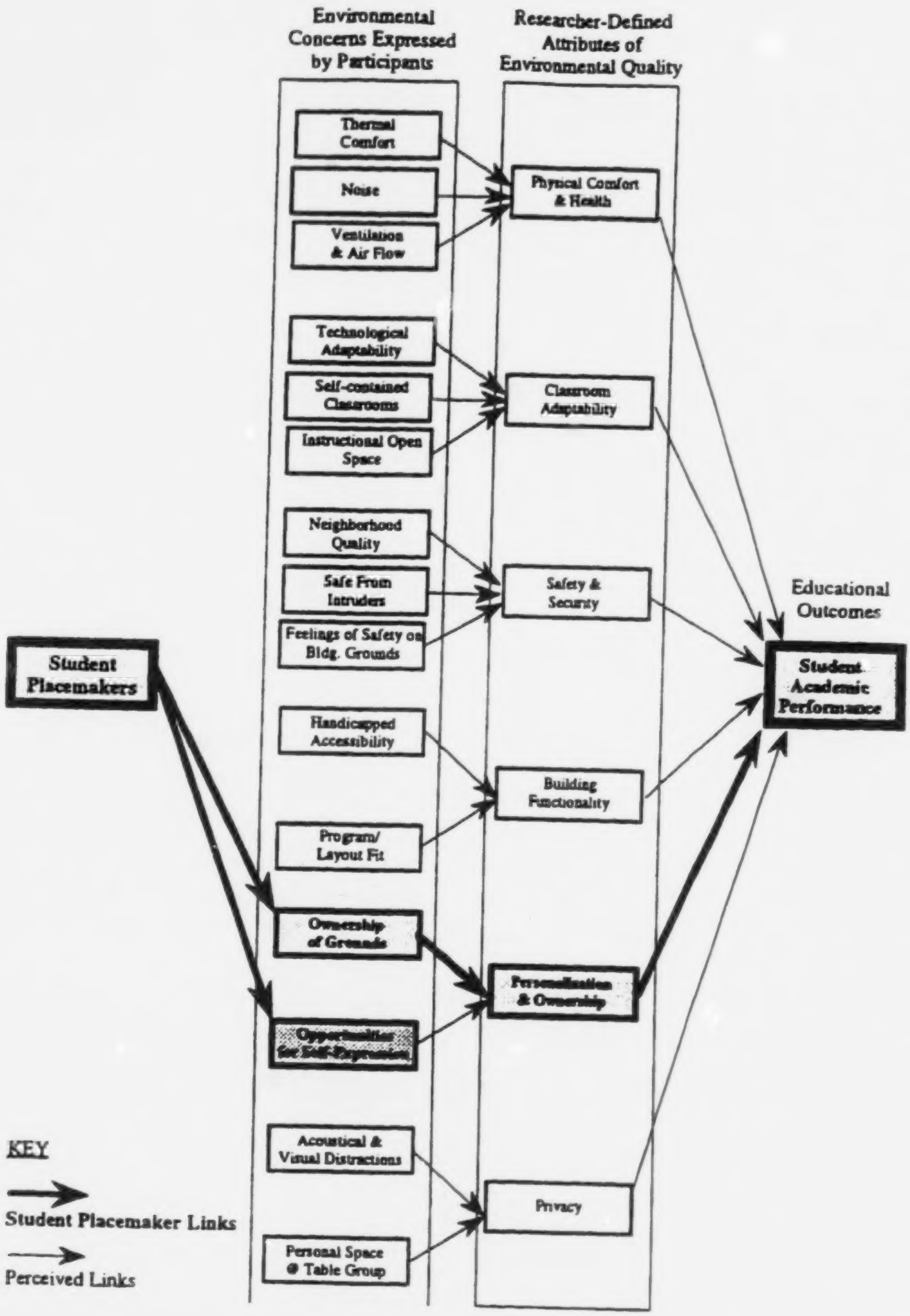
Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of Environmental Quality
Thermal Comfort
Noise
Ventilation & Air Flow
Physical Comfort & Health
Technological Adaptability
Self-contained Classrooms
Instructional Open Space
Classroom Adaptability
Neighborhood Quality
Safe From Intruders
Feelings of Safety on Bldg. Grounds
Safety & Security
Educational Outcomes
Student Placemakers
Student Academic Performance
Handicapped Accessibility
Building Functionality
Program/ Layout Fit
Ownership of Grounds
Personalization & Ownership
Opportunities for Self-Expression
Acoustical & Visual Distractions
Privacy
Personal Space @ Table Group
KEY
Student Placemaker Links
Perceived Links

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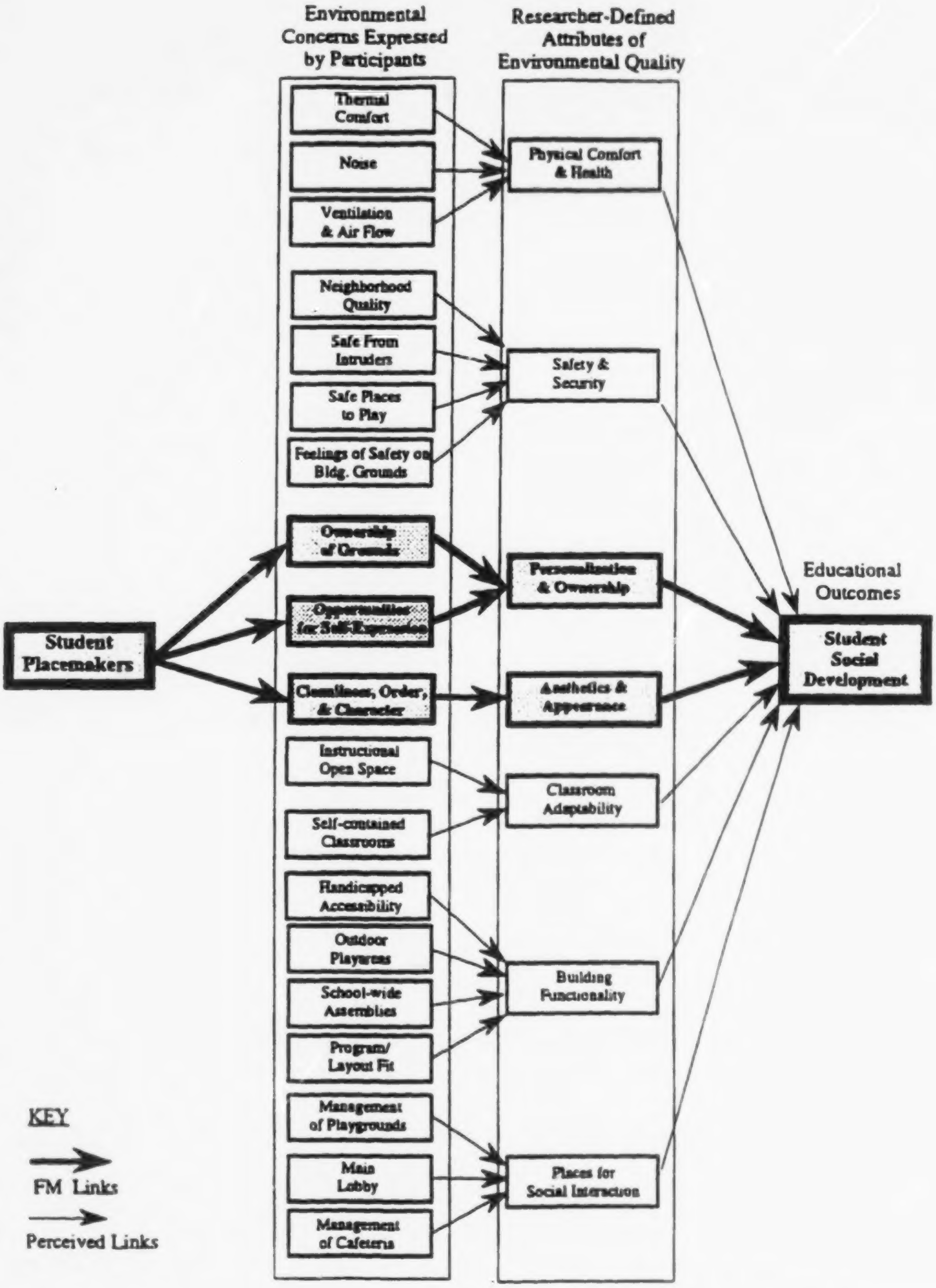
Figure 9.8
Teacher Perceived Relationships Between Student Placemakers, Environmental Concerns, Attributes of Environmental Quality and Student Social Development


Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of Environmental Quality
Thermal Comfort
Noise
Ventilation & Air Flow
Neighborhood Quality
Safe From Intruders
Safe Places to Play
Feelings of Safety on Bldg. Grounds
Ownership of Grounds
Opportunities for Self-Expression
Cleanliness, Order, & Character
Instructional Open Space
Self-contained Classrooms
Handicapped Accessibility
Outdoor Playareas
School-wide Assemblies
Program/ Layout Fit
Management of Playgrounds
Main Lobby
Management of Cafeteria
Physical Comfort & Health
Safety & Security
Personalization & Ownership
Aesthetics & Appearance
Classroom Adaptability
Building Functionality
Places for Social Interaction
Student Placemakers
Educational Outcomes
Student Social Development
KEY
FM Links
Perceived Links

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Community Placemakers

> *There is an enormous amount of energy on Chase Street throughout the day and into the night, with as many as one to two dozen young adults hanging out on the sidewalk, and near the school's parking lot. Just to the northwest on the corner of Patternson Park Avenue and Chase Street is a convenience store and bar that attract still more neighborhood's young people. After school hours, many of the neighborhood residents occupy the school grounds siting on the concrete retaining wall and smashing bottles against the side of the building. The full court basketball hoops were removed a few years ago, while playground equipment has been more slowly removed as well, in an effort to reduce the incentive to hang out on school grounds. Still, teachers must routinely pick up broken bottles, needles and other objects off the playground and playyard behind the building every morning. Clearly, many people in the neighborhood have not taken ownership of the school. It was not always this way though. Ms. Blake, who has been teaching at the school for twenty years states, "The neighborhood was better in the past, when the school was first built. People were in here for some time and they took pride in the neighborhood...they would call the police. Many of those people have died or moved and now its not as safe or stable...it was a gradual change over the years."*

Clearly the area in need of the most improvement from the perspective of the school staff and students is the lack of ownership particular neighborhood residents take with respect to the school grounds. The appearance of broken glass, damaged fencing, open-air drug dealing across the street from the school and on the playgrounds at night, and car break-ins and thefts attest to this lack of ownership on the part of the surrounding community. Attempts by the school administration and staff to create meaningful community partnerships and increased parental involvement have begun to create an environment from which to create solutions to these problems.

Due to the efforts of the custodian of School #25 (described previously) to maintain the building grounds despite the overwhelming odds of fighting vandals, some in the community have actually been encouraged to police those individuals who keep defacing the property outside school hours. There is evidence that some people in the neighborhood around School #142 are beginning to take some ownership in their neighborhood school.

Graffiti problems have been resolved through the dogged efforts of the custodian using a pressure chemical wash on the back of the building where most of the graffiti appears. "Its been a year now since I've had to use the wash," remarks the custodian of School #142.

The Impact of Community Placemakers on Educational Outcomes

Following the previous investigator's analysis and conclusions relating attributes of environmental quality to educational outcomes (Figures 8.1, 8.2 & 8.3), the following three figures (Figures 9.9, 9.10 & 9.11) illustrate the perceived impact of the community as placemakers on educational outcomes through environmental concerns expressed by participants and attributes of environmental quality. Community placemakers, as stated in Table 9.1, are perceived to influence the environmental qualities of safety and security, aesthetics and appearance, and personalization and ownership.

Figure 9.9
Teacher Perceived Relationships Between Community Placemakers, Environmental Concerns, Attributes of Environmental Quality and Student Academic Performance

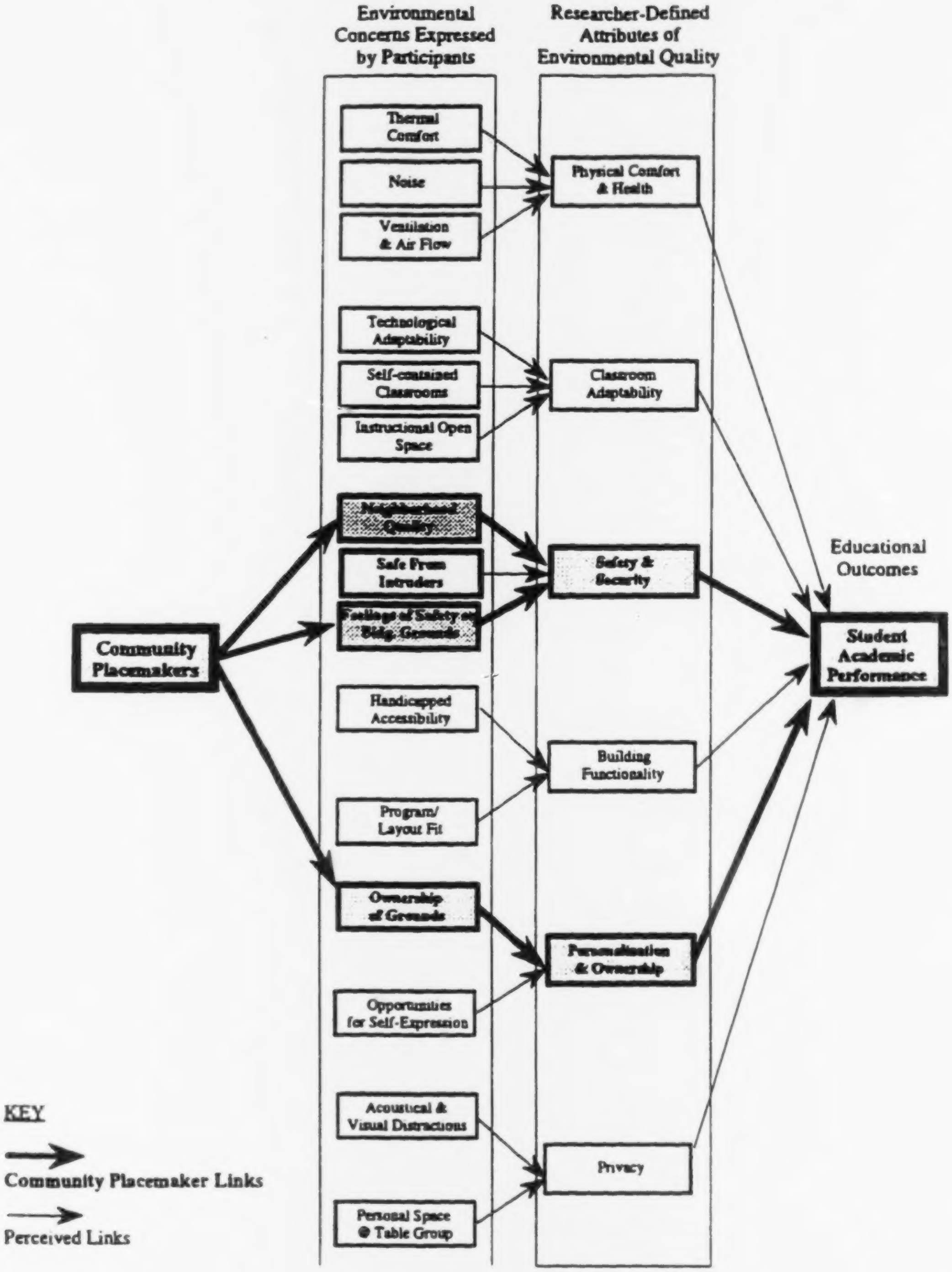
Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of Environmental Quality
Educational Outcomes
Thermal Comfort
Noise
Ventilation & Air Flow
Physical Comfort & Health
Technological Adaptability
Self-contained Classrooms
Instructional Open Space
Classroom Adaptability
Neighborhood Quality
Safe From Intruders
Feelings of Safety on Bldg. Grounds
Safety & Security
Community Placemakers
Student Academic Performance
Handicapped Accessibility
Program/ Layout Fit
Building Functionality
Ownership of Grounds
Opportunities for Self-Expression
Personalization & Ownership
Acoustical & Visual Distractions
Personal Space @ Table Group
Privacy
KEY
Community Placemaker Links
Perceived Links

Figure 9.10
Teacher Perceived Relationships Between Community Placemakers, Environmental Concerns, Attributes of Environmental Quality and Student Social Development

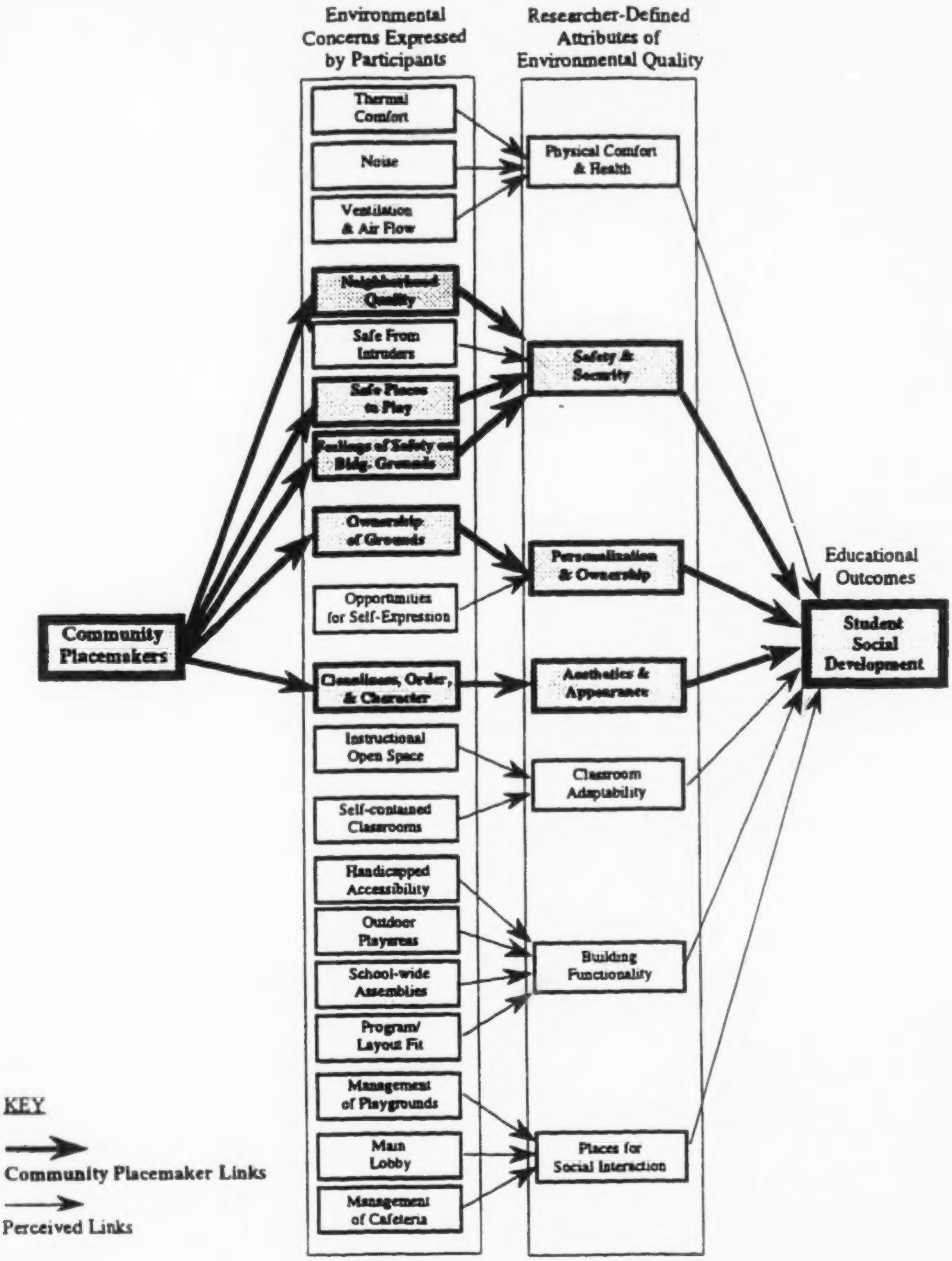
Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of Environmental Quality
Thermal Comfort
Noise
Ventilation & Air Flow
Neighborhood Quality
Safe From Intruders
Safe Places to Play
Feelings of Safety on Bldg. Grounds
Ownership of Grounds
Opportunities for Self-Expression
Cleanliness, Order, & Character
Instructional Open Space
Self-contained Classrooms
Handicapped Accessibility
Outdoor Playareas
School-wide Assemblies
Program/ Layout Fit
Management of Playgrounds
Main Lobby
Management of Cafeteria
Physical Comfort & Health
Safety & Security
Personalization & Ownership
Aesthetics & Appearance
Classroom Adaptability
Building Functionality
Places for Social Interaction
Community Placemakers
Educational Outcomes
Student Social Development
KEY
Community Placemaker Links
Perceived Links

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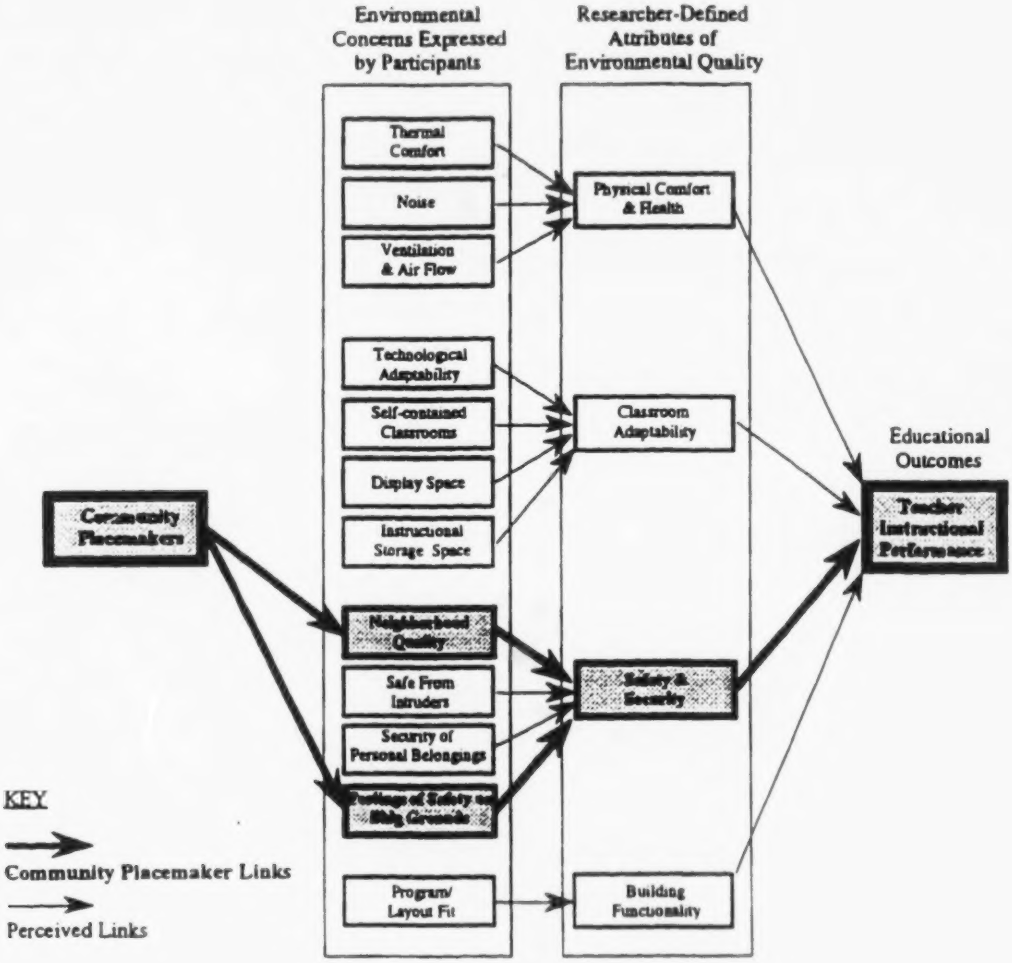
Figure 9.11
Teacher Perceived Relationships Between Community Placemakers, Environmental Concerns, Attributes of Environmental Quality and Teacher Instructional Performance


Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of Environmental Quality
Thermal Comfort
Noise
Ventilation & Air Flow
Physical Comfort & Health
Technological Adaptability
Self-contained Classrooms
Display Space
Instructional Storage Space
Classroom Adaptability
Educational Outcomes
Community Placemakers
Teacher Instructional Performance
Neighborhood Quality
Safe From Intruders
Security of Personal Belongings
Feelings of Safety on Bldg Grounds
Safety & Security
Program/ Layout Fit
Building Functionality
KEY
Community Placemaker Links
Perceived Links

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Gaps and Overlaps in Placemaking Activities

Participants in the study perceive that the environmental quality and its management can have an impact on the educational process. More specifically, participants perceive a relationship between various placemaking activities, expressed environmental quality concerns and educational outcomes. Figures 9.12, 9.13, and 9.14 illustrate composites of the most strongly perceived relationships each of the three educational outcomes investigated in this study.

With respect to perceived placemaker influences on student academic performance, note that building functionality qualities, specifically environmental concerns of handicapped accessibility and program/layout fit, and the physical comfort and health environmental concern of noise are not presently covered by any placemaking activities (shown bold and shaded). With respect to perceived placemaker influences on student social development a similar set of building functionality and physical comfort and health environmental quality concerns are not presently being addressed: noise, handicapped accessibility, outdoor playareas, school-wide assemblies, and program/layout fit. Finally, with respect to perceived placemaker influences on teacher instructional performance, the same building functionality concern of program/layout fit, and the same physical comfort and health quality of noise are not being addressed. In addition, the security of personal belongings (safety and security) is not being addressed. These particular environmental quality concerns represent gaps in the present placemaking activity structure and where perceived control is least.

In addition, some environmental qualities are clearly seen as having overlapping concerns for several placemakers such as personalization and ownership concerns of the ownership of grounds and opportunities for self-expression as well as the aesthetics and appearance concerns of cleanliness, order and character. These overlapping placemaking activities by several groups generally indicate areas where perceived control is greatest.

Figure 9.12
Composite Teacher Perceived Relationships Between All Placemakers, Environmental Concerns, Attributes of Environmental Quality and Student Academic Performance

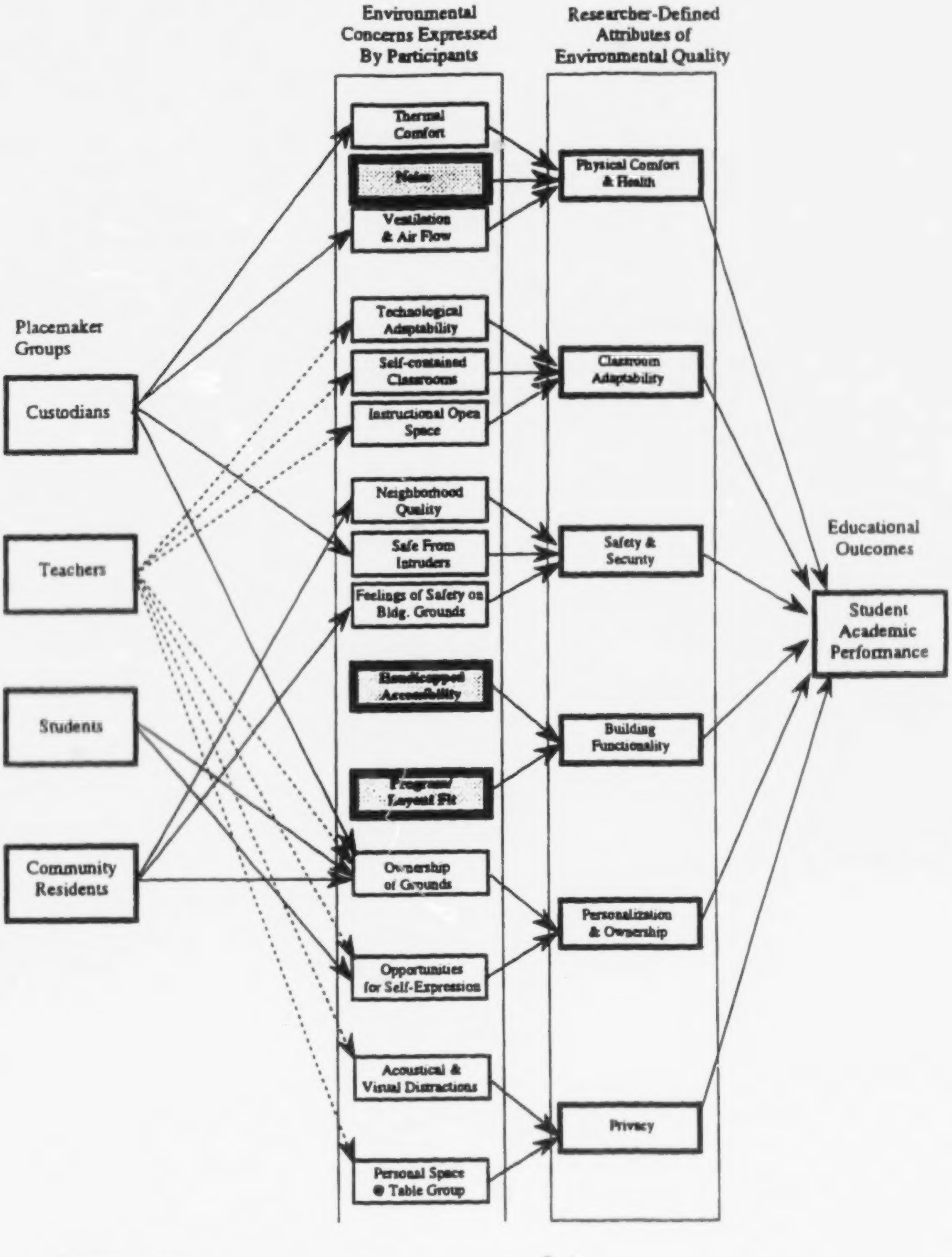
Environmental Concerns Expressed By Participants
Researcher-Defined Attributes of Environmental Quality
Placemaker Groups
Custodians
Teachers
Students
Community Residents
Thermal Comfort
Noise
Ventilation & Air Flow
Technological Adaptability
Self-contained Classrooms
Instructional Open Space
Neighborhood Quality
Safe From Intruders
Feelings of Safety on Bldg. Grounds
Handicapped Accessibility
Program/Layout Fit
Ownership of Grounds
Opportunities for Self-Expression
Acoustical & Visual Distractions
Personal Space @ Table Group
Physical Comfort & Health
Classroom Adaptability
Safety & Security
Building Functionality
Personalization & Ownership
Privacy
Educational Outcomes
Student Academic Performance

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Figure 9.13
Composite Teacher Perceived Relationships Between All Placemakers, Environmental Concerns, Attributes of Environmental Quality and Student Social Development

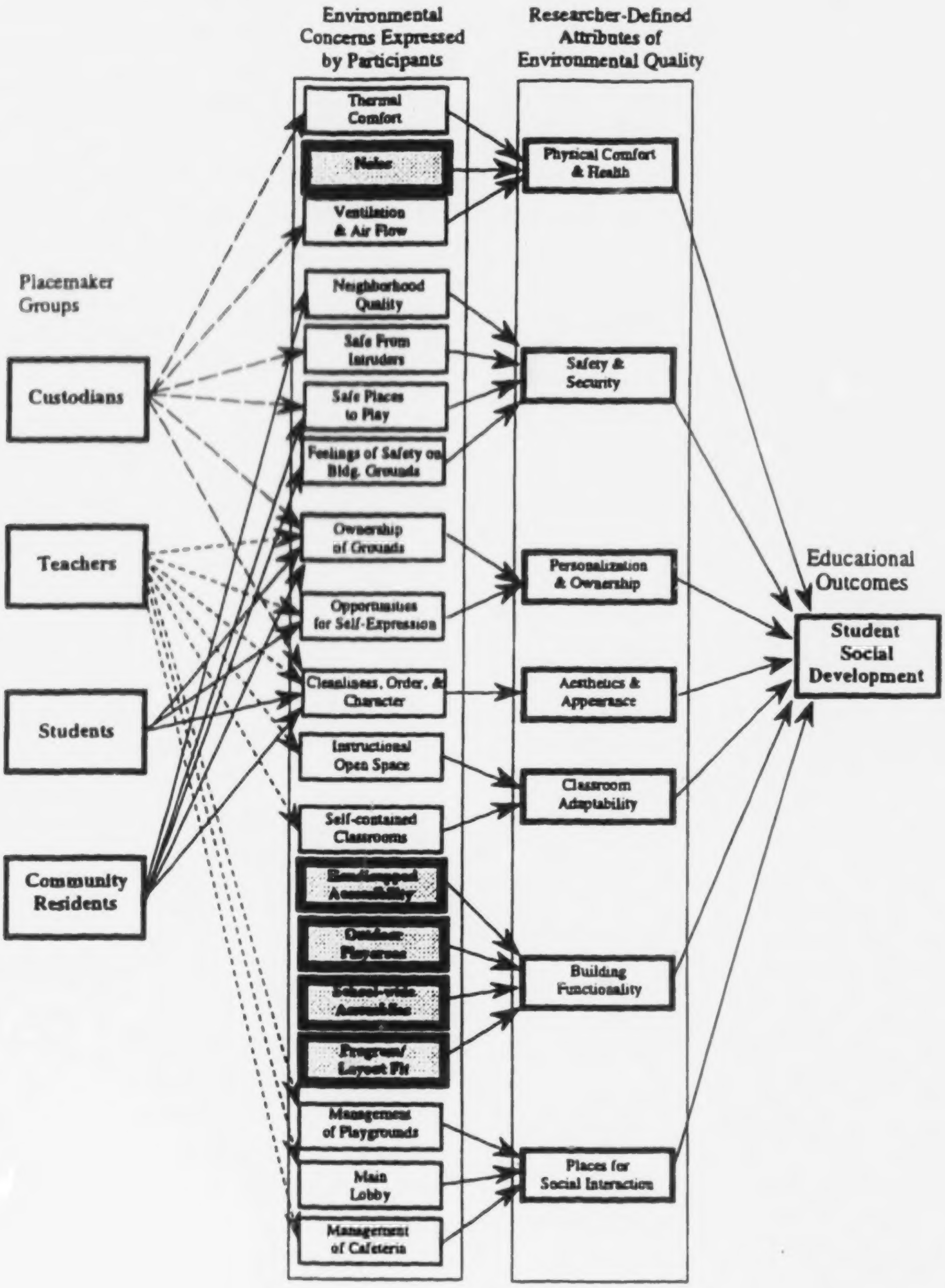
Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of Environmental Quality
Placemaker Groups
Custodians
Teachers
Students
Community Residents
Thermal Comfort
Noise
Ventilation & Air Flow
Neighborhood Quality
Safe From Intruders
Safe Places to Play
Feelings of Safety on Bldg. Grounds
Ownership of Grounds
Opportunities for Self-Expression
Cleanliness, Order, & Character
Instructional Open Space
Self-contained Classrooms
Handicapped Accessibility
Outdoor Playareas
School-wide Assemblies
Program/ Layout Fit
Management of Playgrounds
Main Lobby
Management of Cafeteria
Physical Comfort & Health
Safety & Security
Personalization & Ownership
Aesthetics & Appearance
Classroom Adaptability
Building Functionality
Places for Social Interaction
Educational Outcomes
Student Social Development

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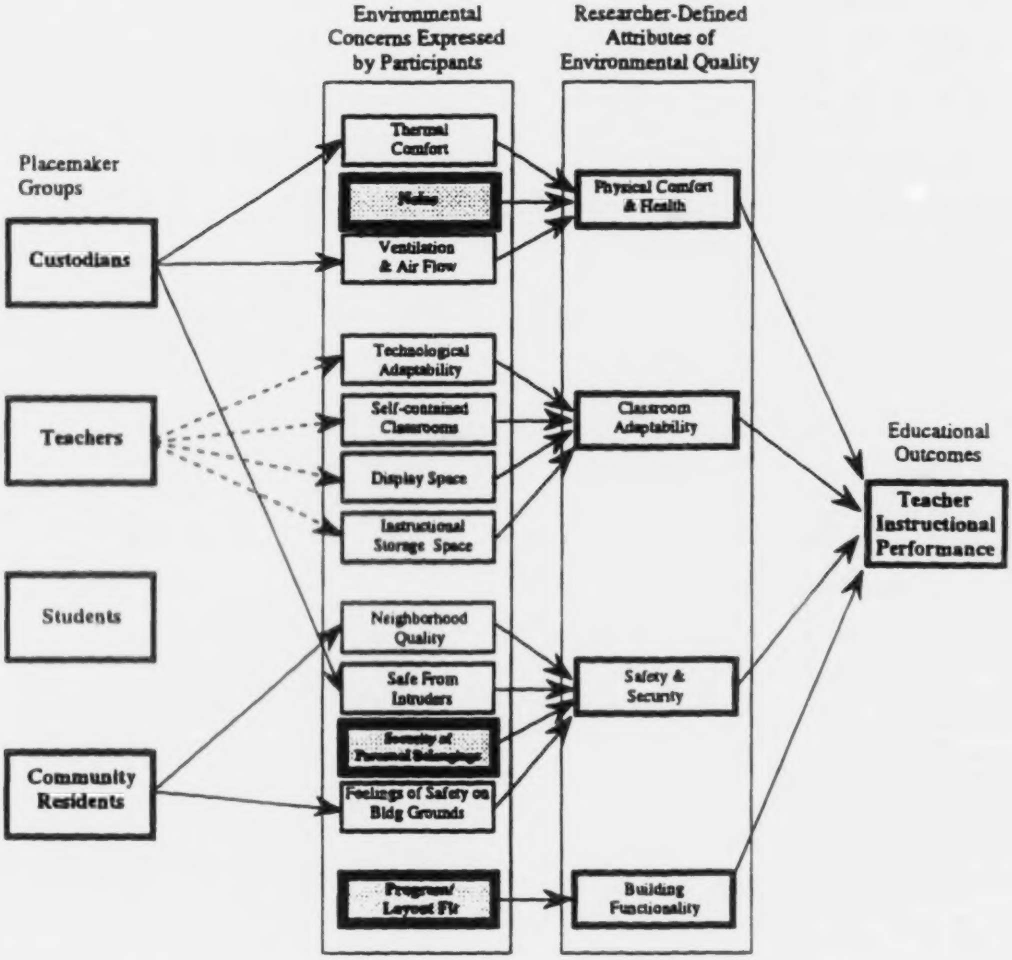
Figure 9.14
Composite Teacher Perceived Relationships Between All Placemakers, Environmental Concerns, Attributes of Environmental Quality and Teacher Instructional Performance


Environmental Concerns Expressed by Participants
Researcher-Defined Attributes of Environmental Quality
Placemaker Groups
Custodians
Teachers
Students
Community Residents
Thermal Comfort
Noise
Ventilation & Air Flow
Technological Adaptability
Self-contained Classrooms
Display Space
Instructional Storage Space
Neighborhood Quality
Safe From Intruders
Security of Personal Belongings
Feelings of Safety on Bldg Grounds
Program/ Layout Fit
Physical Comfort & Health
Classroom Adaptability
Safety & Security
Building Functionality
Educational Outcomes
Teacher Instructional Performance

CHAPTER 10

THE ACTION RESEARCH PROCESS

This chapter reviews the findings from the action research process in each of the five elementary schools in the study. First the issue of involving educational practioners in the conduct of environmental research and design is discussed. Next, one action process is comprehensively described. A general review of findings considering the corpus of case studies is presented as well as a critical analysis of the successes and shortcomings of the action research process in this study. Finally, some suggestions for improving the process are offered.

Participation in Environmental Diagnosis, Design and Management

Collaboration of the school staff in the design of new school facilities is an issue that receives much attention in construction trade and school administrator professional journals (refer any issue of *American School and University, CEFPI Journal, School Business Affairs, or American School Board Journal*). Too often the reality is that the educational staff is never consulted let alone 'allowed' tc participate in design decisions. Many school facilities are designed with the staff being chosen the summer before the school year is to begin and while the building is still in the process of being constructed. Further, the collaboration which does infrequently take place rarely includes the public or the occupants for which the schools are intended to support. Citizen participation is most often in the form of public meetings and final design reviews held for the purposes of legal requirement.

Several teachers who particpated in this study who were present when their schools were being planned experienced first hand the frustrations of non-involvement. In School #138 for example,

> Ms. Berry, an educational specialist has been with the school for 27 years, long before the school even existed in the present building and site. During

> the process of planning the new school building parents were marginally involved in the design review process. However, when decisions started to be made, not enough parents were involved to lobby for their concerns, chief among them a recreational center for the neighborhood and opposition to the proposed open space building design. The decision to adopt the open space building design, and reject the idea of a recreation center was made by the school district and the architect arguing that the budget was tight. The open plan was prototypical to several other school buildings being built in the district during the early 1970s, further evidence of the lack of consideration for local context. Ms. Berry and other parents and teachers felt they had lost the opportunity to create a school that would serve the specific needs of their children.

Present models of the educational facility design process were originally developed during the dramatic educational system reforms of the 1960s in which state involvement in school finance and governance expanded to include the planning of facilities. Many educators believe that state legislatures, regulatory agencies and product manufacturers have had more effect on school design and equipment than educators themselves (Hawkins, 1990).

Compounding this problem of a lack of design participation is that when they have the opportunity to be involved, educators' lack an explicit understanding of how the physical setting affects their teaching and their students learning. In addition, once they identify their environmental concerns, educators often lack the skills -- the environmental competence -- to deal comprehensively with them, often doing nothing. Critics of participation cite these lack of skills and understanding as a reason for rejecting the needs of educators as nothing but 'wish-lists.' Similar environmental concerns continue to surface in school after school without any true solutions being offered. Teachers, in essence, learn on-the-job through trial and error and are often not aware of solutions that have worked in the past. Local knowledge of environmental change is not collectively shared. These problems are arguably due in part to a lack of education and in-service training of teachers on how to effectively utilize, maintain and manage classroom space to support instructional activities.

Some educational researchers suggest that teachers have not been trained to look at the environment in non-traditional ways in order to organize space to maximize learning areas, relieve crowded conditions, and to visualize classroom space in new and creative ways (Loughlin & Suina, 1982). What the magnitude of this problem may be, or how to develop strategies for informing teachers in the use of instructional space is presently unexplored.

When in-service is considered it does not always provide any useful knowledge, appropriate for local circumstances, as in the case of one of the schools in this study:

> Several school teachers at School #32 indicated that they received one short in-service session with their private educational management company on how to arrange their classrooms to accommodate a cooperative learning strategy. The prototypical floor plan had been photocopied many times and did not appear to have been applied to the particular problems of their self-contained classroom sizes or configurations. The teachers complained that the plans they were given were apparently too generic for their particular circumstances. After repeated requests, the researcher was unable to obtain a copy of the prototypical plan, further evidence of the lack of value the plan had for teachers in this particular school.

Based on the conclusions related to placemaking in Chapter 9, it is clear that occupants of the school, i.e., the teachers, students, staff and administration, all have a placemaking role in maintaining and improving the environmental quality. Facility management, traditionally custodial and maintenance services, can and do have a significant role in this process, but occupants have a role and responsibility as well. However, not always being fully cognizant of their placemaking potentials, occupants often overlook opportunities to leverage their local knowledge in the service of improving the environmental quality of their school. The level of environmental competence occupants possess will inevidably vary. Opportunities to participate in environmental change creates a situation within which occupants can begin to discover their placemaking potentials.

One of the explicit value-latent objectives of this dissertation project was to facilitate environmental competence in such as way as to encourage environmental change, hopefully in the service of improved environmental quality, as well as organizational development and change (increasing awareness of placemaking activities) within the school. Thus far in this dissertation the professional placemaker role has not been explicitly articulated. Within the context of this project, the action researcher acted as an outside professional consultant with the intent of design intervention and education. This intention brings with it some professional risks. As Schneekloth and Shibley (1995) state,

> "We dare to enter into the lives of other human beings and change them, and, in this process, to restructure their reality and our own. The attitude of our intervention determines whether the educational process will be liberating and educational for all, professional placemakers included, or destructive, essentially an act of cultural invasion" (p.56).

An environmental quality assessment action research process was developed as one potential domain of action within which occupants could begin to develop their environmental competence and become more aware of their placemaking roles in the school. Concurrently, the action research process was developed in such as way as to provide the professional placemaker the opportunity to engage in reflective practice. The following section recounts one action research process, providing qualitative data for critical analysis and reflection.

The Action Research Process: The Case of Robert Coleman Elementary School #142

While all five schools in this study were part of an assessment process aimed at improving environmental quality, Robert Coleman Elementary School #142 provides the closest example of an "on-going" process of improvement. The working group at Robert Coleman went furthest in attempting to address their environmental concerns. The process of assessment, initially focused on identifying problems and concerns, eventually took on a life of its own, with identified environmental concerns being proactively addressed, and solutions being proposed. Much of the success of this process was the result of dedicated educators willing to take risks with a fresh vision of what their school could be. For Robert Coleman, the process of identifying and prioritizing common environmental concerns has provided new opportunities for reconsidering aspects of their educational program. They realized that resolving their environmental concerns goes hand-in-hand with organizational change.

The following is a detailed outline of the action research process Robert Coleman followed (See the Case Study Profile: School #142 in Chapter 5 for an introduction to this case and for a complete review of this case study read the full report in Part III):

Introduction to the Coleman Case

Robert W. Coleman Elementary School is in the process of implementing a vision of a community school that offers a one-stop shop interagency environment, one that reaches out to form partnerships with the community in order to more comprehensively serve the families within the community. The vision includes medical and dental care, religious services, family counciling, GED, and other programs. In essence, the school intends to become a complete community resource center. After some thought, the school made the decision to start with the development of a health services center within the school although a health service provider has not been identified as yet. The goal is to find a provider and to provide space within the school by the next school year.

Sequence 1: Group Development

Coleman was the first school to accept the general outlines of the project in January of 1995. However, not until June 1995, after other schools agreed to participate in the study did more detailed phone conversations take place with the principal to gain her interest, commitment and support of the goals of the project. A short 2-page project proposal outlining mutual interests was mailed to the prinicipal to solidify their commitment and agreement to participating in the project.

The process of entry into Coleman took place in August of 1995. An initial site visit came just one week before school was scheduled to be openned for the next Fall. Interviews were conducted with the school's principal, the assistant principal and the head custodian. A walk-through tour was conducted as well with the assistant principal and several impromptu encounters occurred with teachers, custodians, and some students taking courses during their Intercession period.

From this initial visit an understanding developed of the specific facility management processes taking place in the school, and an understanding of the history of school interventions initiated by the public/private partnership. During this initial visit the assistant principal began negotiating the scope and scheduling of the proposed project.

During the month of September of 1995, the assistant principal identified three individual teachers and a learning coordinator to participate in the action research group (working group). The group consisted of three women and one man. Teaching experience ranged from two years to twenty-two years, while experience in the present school building ranged from two years to fourteen years.

Due to the fact that the majority of the scope and goals of the project were defined through earlier negotiation with school administrators prior to the identification of the action research working group, the goal setting process was omitted with working group participants. Instead, the researcher formally introduced the intended goals of the action research group during the individual interviewing process and again at the start of the workshop. At least in this case, it appeared that several of the working group members did, in fact, 'buy-in' the goals of the process.

The first opportunity to address group process issues did not occur until the workshops. Prior to each workshop and during the interview process, participants were prepared for the task of working together in a group to review and analyze the data gathered. Later during the workshop itself, procedural and group building issues arose informally. Comments from working group members concerning procedural and group building issues were discussed along side substantive issues without much difficulty.

Sequence 2: Defining the Need for Change (Diagnosis Phase)

Beginning in September of 1995, a physical facilities survey, organizational survey and a first phase of interviews were conducted. Descriptive data of physical facilities and building systems were obtained from the Department of Facilities in BCPS as well as through a facilities walk-through with the principal and/or building custodian and a photographic survey. Written descriptions of organizational philosophy, mission and educational programs were gathered from archival records. Later in the process achievement test scores, school attendance and population data were obtained from the Department of Evaluation and Research in the Baltimore City Public Schools for use in the comparative case study analysis.

In addition, the principal and custodian were interviewed concerning their perceptions of environmental quality and its maintenance generally and specifically within the school. The outcome of this step was an initial set of environmental quality concerns to confirm or discomfirm in the next phase of interviews with individuals of the action research group (working group).

During this diagnosis phase of the process individuals from the working group, as well as a parent liaison were individually interviewed utilizing an interview guide which asked questions within the context of fourteen attributes of environmental quality. The initial list of fourteen attributes from the original interview guide were recast as ten attributes with more locally responsive titles in order to create more meaningful and immediately recognizable categories for the broadest set of participants.

In addition, a take-home worksheet was given to each working group member as a means of preparing them for the additional questions to be posed at the follow-up workshop. The take-home worksheet also provided another means for participants to express themselves on their own time and also to give them an opportunity to respond to issues they had not thought of during the interview. Data from these worksheets were added to the collection of data to be analyzed for consideration at the workshop.

At the end of their interview, working group participants who were classroom teachers were asked to distribute a short five-item student survey to their students. The student survey focused primarily on what students like most about their classroom, what they like the least about their classroom, what their favorite place in the school is and why, and finally had them draw their favorite place. The return rate for the surveys was 100%, the best return rate of all the schools in the study. Unfortunately, student surveys were obtained too late to be utilized as additional data for the workshop.

While interviews were being conducted by the principal investigator, the research assistant was conducting descriptive behavioral observations throughout a single school day. The research assistant was asked to develop description observations of activities by looking at a series of naturally occurring social situations and trying to record as much as possible. Simultaneously, a photographic survey was conducted to develop as rich a description as possible. These descriptive observations were then analyzed for the presence of possible environmental quality concerns and added to the list of concerns gathered through interviews for further consideration, interrogation and discussion at the workshop.

Unobtrusive observation was difficult to conduct due to the nature of the school with dozens of eyes on the research assistant. This situation was used as an opportunity to further broaden our perspective on environmental quality concerns in Coleman. In those moments when the research assistant was confronted with an inquisitive teacher, parent or student he was instructed to allow time for informal social encounters and to have an answer to the often repeated question "what are you doing," by proactively responding back "I am studying how well your building school meets your needs...what do you like or don't like about your school building?" This strategy allowed the research assistant to obtain further anecdotal evidence and instances of environmental concerns from a set of occupants not captured during observations or interviews. In addition, this strategy of actively participating with occupants in situ provided yet another method of gaining as wide a perspective as possible in the given short duration of each field visit — a single school day.

During the months of November 1995 and February 1996, Coleman was able to schedule three workshops in order to begin addressing some of the more pressing environmental concerns. The goal of the workshops was to (a) confirm or refute the list of environmental concerns developed during categorical aggregation analysis, (b) further clarify of the current set of identified environmental concerns, (c) identify additional environmental concerns not already identified, (d) prioritize environmental concerns, (e) and conceptually map the perceived relationships between environmental concerns and several educational outcomes (see Chapter 4 for a detailed accounting of the general workshop process procedures).

This first workshop proved to be just the beginning for the working group, who were almost immediately interested in finding ways to address the concerns they had identified (Figure 10.1).

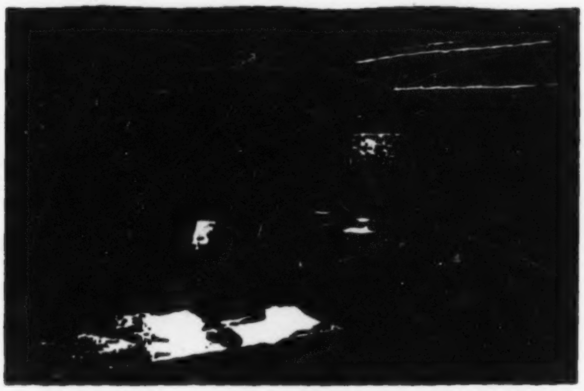


Figure 10.1
Discussing environmental concerns during one of the workshops at School #142

The second workshop was conducted on December 13, 1995 with the same working group completing work begun in the first workshop. During this workshop, the group began to eagerly consider options for re-designing the layout of their open instructional areas on both the first and second floors of the school.

Based partly on the results of the workshops, a teacher survey was developed by the researcher to survey a broader set of teachers concerning their perceptions of the degree to which attributes of environmental quality have been a hindrance to their teaching or their students' learning, their perceptions of the dependability of these attributes, as well as, their over all satisfaction and fairness with the degree to which their environmental quality concerns have been managed. The return rate was 24% across all schools. Due to the low return rate, the results of the teacher survey were aggregated across all cases to form one of several datasets for the comparative case study.

The case reports acted as a summary document that combined the workshop results, anecdotes, interview transcripts, observations, and photographic data. Each case report formed a narrative of the key environmental concerns within its unique educational and social context (see the full case study in Volume II, Part III).

Sequence 3: Designing and Focusing a Program for Change (Prescription Phase)

By the end of the second workshop involving the four teachers and the assistant principal, the group was ready to act. Discussing the problems with introducing yet another outside human service agency into the already tight open space layout consumed much of the group's discussion.

> The assistant principal declared, "I think its a priority that should be looked at, and one of the things this group can start thinking about for starting to plan for next year in September is 'can we use this space differently?" She stated that this assessment process has given them impetus to question what they could do to improve their educational environment: "By doing this, we have been able to look at some stuff and say, hey, we have a bad thing, but how can we make it better? How can we use it more effectively?... and that's going to help us."

The working group began to look, rather informally, at the opportunities rather than both opportunities and threats, from the external environment on the impact of their efforts at environmental and educational change, identifying several volunteer groups who were already scheduled to make physical changes to the building. They also realized that they needed to involve the School Improvement Team and the principal if change was to occur.

The desire for further structural changes on both the first and second floor open instructional areas were a high priority environmental concern. Teachers in both instructional areas were open to any suggestions that might emerge from the working group.

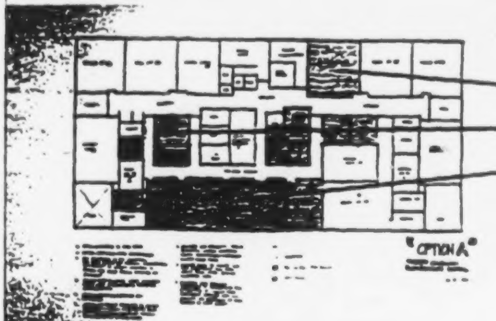
Much of the re-planning of the open space was centered around a more efficient use of the abandoned library/media center area as well as provisions for larger instructional areas for the teachers who needed it most. The biggest puzzle for the group was the principal's vision of locating a new health suite on the second floor. Three separate options were drawn up and discussed informally among the group (Figure 10.2).

In some ways, the principal was way ahead of the working group. She had already

Figure 10.2
Second Floor Open Floor Plan Layout Options: School #142

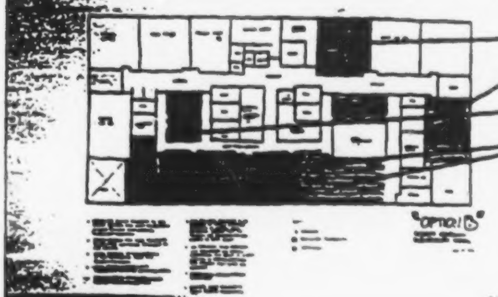
Existing second floor open plan classroom area in School #142

One typical open plan classroom in School #142 experiencing a series of environmental quality concerns



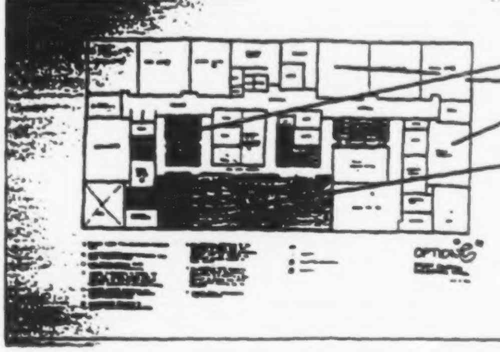
Option A

- Reclaim classroom from YMCA
- Provide new health suite
- Restructure open plan classrooms



Option B

- Reclaim two classrooms from YMCA and Parent Academy (PA)
- Provide new health suite
- Relocate YMCA and PA and re structure open plan classrooms



Option C

- Provide new health suite
- YMCA and Parent Academy to remain
- Restructure open plan classrooms

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contacted a group of volunteers to begin the process of not only reorganizing storage space, but also dismantling the unused media center as a first step in reorganizing the physical space in the school, with the intent of accommodating a health agency suite on the second floor.

Once word about the principal's decisions were received by the working group during the second workshop in December 1995, they realized they had to move quickly if their findings were to have any real impact. The working group realized that the vision of their school's principal of forming a full-service community school was vague with respect to the changes in the physical environment that would be required to meet their social and educational goals. They immediately went into action and set up an impromptu meeting with the principal to inform her of the environmental concerns of the group. The researcher, acting as professional consultant, was asked by the group to summarize the findings of the group to the principal. The researcher described the need to create a comprehensive environmental action plan which addressed the twenty-seven concerns identified by the working group and that complemented the educational program changes taking place. The desire to provide space for yet another community service function at the expense of educational classroom space could be counter productive. Various design solutions were discussed in the abstract and a promise to develop some options for consideration were offered and followed up on by the researcher who faxed several design options a few days later.

The second floor planning options (Figure 10.2) were then formally presented to the principal and the School Improvement Team (SIT) committee, the ultimate decision makers on February 13, 1996 in which design options for new open plan configurations generated during the researcher's absence, were discussed (Figure 10.3).

At the SIT committee meeting, the decision to follow a modified and phased Option A was reached. Storage rooms were to be re-organized, the second floor open space in-

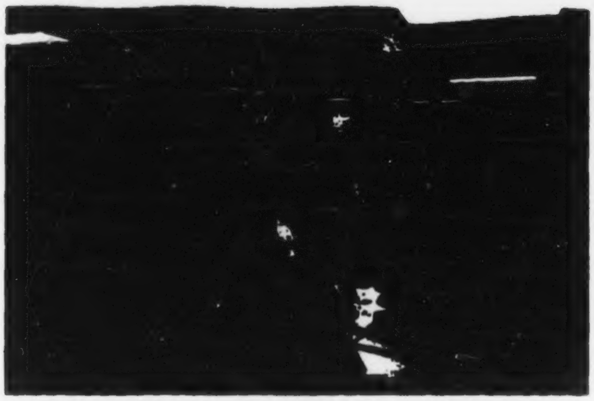

Figure 10. 3
Discussing environmental planning options at the School #142 School Improvement Team (SIT) Meeting

struction area was to be reconfigured without assignment of particular classes. The issue of whether the health suite would be located on the first or second floor, and other reassignments of classes to newly created instructional areas on the second floor would be tabled until the fourth option could be explored (Figure 10.4).

In addition, many of the problems of the second floor open space instructional area were echoed on the first floor by teachers in the SIT meeting. The main focus of discussion centered around the location of the existing cubbies that divided up the open space in a formal way, preventing additional space needed for desired learning activity centers (Figure 10.4). The final outcome of the SIT meeting was a series of design option responses to many of the environmental concerns expressed by the working group (Figure 10.5)

Sequence 4: Developing and Implementing an Action Plan

Unfortunately, after these decisions were reached, very little time or emphasis was placed on the need to develop an action plan. The working group was concerned with creating change for the following school year and instead had to settle on an adaptive/ reactive strategy, over other long-term strategies which could have been adopted to address the complexity of the problems they had outlined in the workshop.

Figure 10.5a
Minutes from the School Improvement Team Meeting

STEPS TOWARDS A FACILITIES ACTION PLAN:
Exploring Implications of an Inter-agency Community School Vision on Existing Facilities

School #142: Robert Coleman Elementary School

The following chart is a running list of environmental quality concerns identified in preceding interviews and workshops with a sample of teachers from Robert Coleman Elementary School. A short description is provided to indicate how the proposed design options respond to these environmental concerns.

No.	Environmental Concern	Design Option Response
1	Playground in unsafe	A grant proposal for developing a age-appropriate and child development centered playground is being written.
2	Overcrowded classrooms	Design options indirectly address overcrowdedness by providing more room for classes through space planning of open space and assigning more self-contained classrooms to classes and not programs.
3	Landscaping projects	Involving students in planting and managing landscaping projects as part of the curriculum.
4	Too Cold!	Addressing the problems with the existing mechanical system is a long-term issue that must be seriously addressed via maintenance contracts.
5	Teacher's Lounge	Design options do not affect in any way the current functioning of the teacher's lounge.
6	School-wide assemblies	This issue was not seen as a big priority. Rarely does the entire school assemble.
7	Commons stage	The commons is seen as a flexible multi-purpose space and its use as a temporary instructional space is not seen as a problem or issue. In fact, its use as an instructional area is seen as evidence of creative use of limited space.
8	Duplicating machines	No longer an issue
9	Lobby bottleneck	Bottleneck created by dismissing entire school through one exit point. Resolving this issue may involve re-thinking dismissal management patterns to allow for students to exit through the cafeteria as well as the main entrance.
10	Underutilized media center	Design options efficiently utilize the existing media area for open plan classrooms in all schemes. This area is also a central one on the second floor and provides a good opportunity for locating shared program spaces such as the Parent Academy and the YMCA.
11	Bathroom ventilation	Although not explicitly stated in the design option descriptions, correcting the bathroom ventilation problem could be linked to work related to the switching of boys and girls bathrooms. If bathroom ventilation is not addressed during the first phase of work, it should be addressed at some point.
12	Sharing of lockers	This issue may not be able to be addressed unless more space is made available through additional construction on site.
13	Computer problems	The school plans on obtaining CD-Rom systems and additional computer in the future. A long-term strategy must be developed to deal with the security and management of computer systems throughout the either in a single computer room to be shared by all students or some means of securing computers and networking them throughout the building.
14	Parents finding way	Parent wayfinding can be addressed through clearer signage at the entry of each classroom and instructional space as well as developing you are here" maps to help parents quickly orient themselves.

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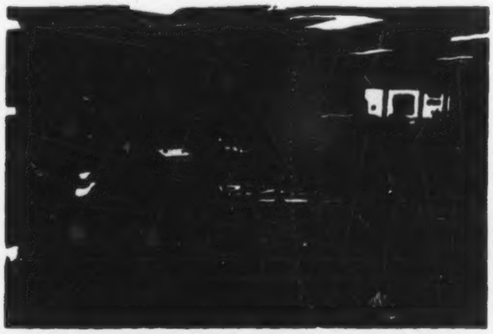
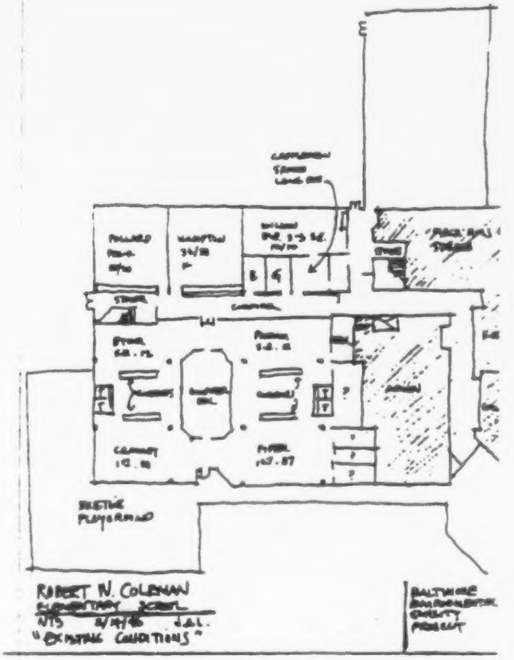
Figure 10.4
First Floor Open Floor Plan Layout Options: School #142

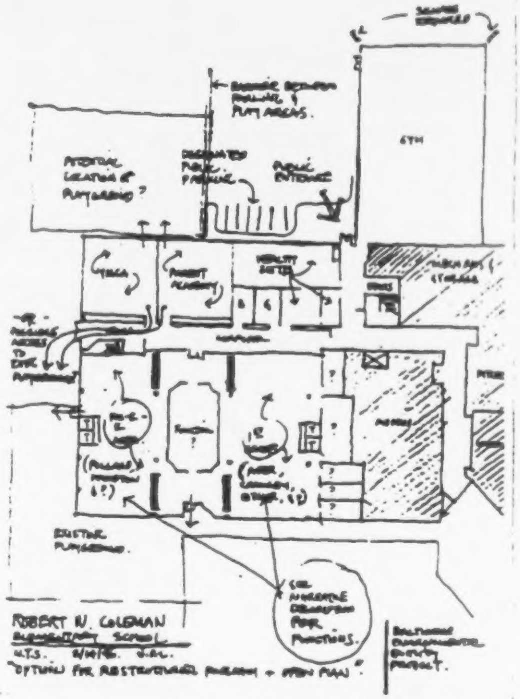
Typical first floor open plan classroom showing crowded classrooms



Middle area between classroom pod cubbies in the first floor open plan area


EXISTING PLAYGROUND
ROBERT W. COLEMAN
ELEMENTARY SCHOOL
NTS
"EXISTING CONDITIONS"

This sketch documents the existing conditions on the first floor at the open instructional pods. Note the present location of the cubbies in this drawing separating the four identifiable instructional areas.


GYM
YMCA
PARENT ACADEMY
HEALTH SUITE
EXISTING PLAYGROUND.
ROBERT W. COLEMAN
ELEMENTARY SCHOOL
N.T.S.

This second sketch provides some initial ideas concerning the relocation of the cubbies towards the space entry points as well as opening up the pods to allow for more flexible planning of instructional space for a non-graded educational program proposal being discussed among teachers and adminsitration. Also note the relocation of the YMCA, Parent Academy and the Health Suite to a fourth optional location in the self-contained classrooms to the north of the plan.

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Figure 10.5b
Minutes from the School Improvement Team Meeting (Continued)

15	Unorganized storage	The problem of unorganized storage is an obvious first step to improving the efficiency and effectiveness of the school as a workplace for teachers. Considering the consolidation of storage space may also free up some additional rooms that could be used for other functions such as health suite offices and exam rooms.
16	Multiple uses of gym	Not an issue see #7 for a similar argument.
17	Parking lot safety	This is an on-going problem. Even with the purchasing of monitors problems still persist. How monitors are to be managed must be addressed, in addition, a random parent patrol strategy could be instituted.
18	Ventilation for science projects	Relocating Jones to the window would allow the possibility of creating a ventilation system to the outside for science projects.
19	Column obstructions	All design options take into consideration the limitations presented by column obstructions in open space. Whenever possible partitions should be aligned with columns to "bury" them within the partitioning system.
20	Open space/ self-contained	The realities of open space (lack of privacy, distractions, noise) have been tempered by the suggestion of higher partitions, a more orderly layout that limits the need to wander around in large unstructured open spaces, and the relocation and reassignment of additional classes to self-contained classrooms, while other programs that do not require long periods of concentration are reassigned to open space areas.
21	Inoperative windows	Inoperative windows on the first floor are understandable due to security problems, however, the advantages and disadvantages of more operable windows on the second floor should be discussed.
22	Safety from intruders	Much has already been done to limit the possibilies of intruders. Requiring hall passes, while difficult to administer is another positive step in the direction of further safety. However, the Main Lobby space does not currently facilitate the necessary control of getting vistors to first come to the office. Relocating the main secretary by having a desk right at the door is one possible way to increase control at the entry.
23	Signs of academy unity	Academies are central to the grouping of students in the school. Providing some additional physical distinctions between academy areas or zones would further reinforce the idea of smaller academies.
24	Visability and surveillance	How to address? Is this a problem for others? How might it be addressed?
25	Distractions in open space	See issue #20.
26	Student work displays	It has been suggested that student work displays in the school are not satisfactory. How might this be addressed?
27	Vision of one-stop-shop inter-agency approach	The design options are a direct response to the vision of a community school. The options are limited by the scope of the present goal of bringing in a health agency only. Additional services may require additional facilities or the formulation of management strategies targeted at reconceptualizing existing space uiltization. The purpose of the ACTION PLAN is to directly address this issue of the school's vision and mission.
28	Bathrooms distracting	See issue #20.
29	Traffic flow distractions	See issue #20.
30	Handicapped accessibility	If extensive reconfiguration of the bathrooms is to take place, providing one handicapped stall for each could be necessary and even desirable.
31	Lack of privacy	See issue #20.

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Figure 10.5c
Minutes from the School Improvement Team Meeting (Continued)

32	Auto vandalism	See issue #17
33	Air quality	See issue # 4. Testing of air quality could be part of an overall facility maintenance plan to be negotiated with your facility management vendor.
34	Plumbing and flooding	See issue #4. This issue is related to the development of an overall facility maintenance plan to be negotiated with your facility management vendor.
35	Bathroom location remote and unsafe	How might it be addressed?
36	Design for further structural changes	Design options are a logical extension of this concern by teachers interviewed that the currently layout is not effective.
37	Middle space between pods- first floor	Although not discussed in the design options descriptions, it is suggested that cubbies that currently turn inward to a third central shared space between classes be relocated and central space be divided evenly between both classes to gain additional floor space to develop activity centers.
38.	Lobby lighting at entry dark	The reason that lobby lighting is unacceptably dark is the result of (a) low intensity lighting (low wattage incandescent track lighting), and (b) the lobby's dark brown brick (which has a low light reflectance value). This situation could be modified through the use of white surfaces (possibly white tackboard surface backgrounds for posters and displays) as well as additional overall ambient lighting to complement the existing track lighting.
39.	Crowded administration	The administrative area does not effectively accommodate all the functions now in the area. The possibility of consolidating office space and/or relocating some functions out of the area to existing small office size spaces in instructional areas should be considered.

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On Monday, February 19, 1996, the volunteer group from the Civic Works Project came into Robert Coleman to begin the ground work for implementing the new facility plans. Later in the month, another community volunteer group continued the process. Unfortunately, the minimum was done, clearing out storage closets, and reorganizing the cluttered media center.

Due to an external threat to Coleman from the school system, no formal action was taken on the findings of the action research working group for the following year. Coleman was one of a number of schools in the system slated for Reconstitution (a administrative management reorganization plan imposed by the State in low performing schools). As part of the reconstitution, the school was required to submit an Action Plan to explain how they would go about improving conditions at the school to be more favorable to increasing student performance. The Coleman Case Report was submitted in an Appendix to the Reconstitution Action Plan to the State of Maryland. State officials purportedly perceived the case report as a critical summative evaluation, not a formative evaluation aimed at proactive and positive collaborative action steps the school was already taking to improve the environmental quality of their school. The prinicipal placed blame on the assistant principal who ended up leaving the school.

The story of Robert Coleman continues with or without the benefits of the environmental quality assessment project. The school settled into their newly organized space in September,1996. Many of the environmental concerns have not been addressed. Although a few educators at Robert Coleman have gained a new awareness of their environmental setting and a measure of competence in confronting these concerns, they have not had the support of the administrative staff of either their school or the district. Although it is clear during the School Improvement Team Meeting that everyone recognized the need for environmental change and even had some agreement as to the direction of that change, no effort was given to implementing the plan, based on the perceived priorities of meeting yet another state manadated achievement goal. The administration did not see the connection between improving environmental quality and educational outcomes like the working group had come to believe in.

Although this level of involvement was not seen as necessary in the other schools in the study, this particular case illustrates what is possible given a great enough desire for change. Many environmental concerns that schools confront can only be effectively addressed by educators themselves. In fact, all schools, through SIT committees, have the capacity to deal with environmental concerns.

Overall Results of the Action Research Process

All five schools successfully identified problems in the form of environmental concerns and were able to prioritize them and reflect on how these environmental concerns might effect student academic performance, student social development and teacher instructional performance (See Appendix B for a summary of prioritized environmental concerns from each school).

Once the results of the workshops were reached, very little action on the part of the action research working group occurred independent of the researcher. In addition, there was minimal feedback from the school participants at any stages of the report writing. This lack of feedback could be interpreted as the results not needing any additional clarification, but most likely participants perceived themselves to have completed their end of the research contract. Once they recognized that no funding was available to actually change anything beyond their own existing operating budgets, administrators and teachers perceived the process to be another outside research study and did not take ownership of the process.

Although School #25 followed all the prepared activities outlined for the project, there was no feedback at any stage in the process, nor any indications that the action research working group was motivated to address any of the environmental concerns they identified and prioritized.

School #31 experienced a change of principals and as a result there was some confusion concerning the goals of the study. Again, there was no feedback at any stage in the process, nor any indications that the action research working group was motivated to address any of the environmental concerns they identified and prioritized.

School #32 was similar to Schools #25 and #31 in that there was very little feedback at any stage in the case writing process. Some minor outcomes of the process was that the principal is committed to providing a new carpet for one teacher, is currently discussing the possiblity of centrally relocating the teachers' lounge to increase its use, and committed to purchasing cork strips above tackboards to eliminate wallhangings from falling off walls in humid weather, and purchasing bottom drawers for classroom tables to improve storage conditions for students who currently have no place to store their supplies, materials, and workbooks.

From the beginning of the project, the prinicipal at School #138 perceived the study as a comparison between the performance of her school against the privately managed schools. Teachers that formed the working group acted in a similar manner as those from the other schools. The principal was debriefed about the results and findings of the study. but did not show any interest in following up on any of the environmental concerns identified by the working group.

A Critical Analysis of the Action Research Process

1. Value

The forms of observation and data gathering used in the action research process in most cases highlighted some previously neglected possibilities, while in a few cases confirmed what is already known, but not explicitly documented. The school culture itself is justifiably tenative and suspect of outside experts entering their school to gather data that is either not going to have any bearing on their everyday activities. This was a perception that remained for most teachers during the entire project. The perception was compounded by the fact that visits were necessarily few and short. This perception could have been adverted had the researcher had more time at the site.

In School #32 several environmental concerns within the classrooms of some teachers arose that the group at large and the prinicipal had not been aware of, while many other concerns were well known to all. School #142 illustrated a process in which many new possibilities for restructuring the open plan instructional spaces became evident as the process continued, while in Schools #25, #31 and #138, due to the short duration of the contact with the working groups, very few new possibilities arose. One explanation for this result may be that with the short impact and duration of the research process with the staff very few possibilities for environmental change could be adequately explored. There is evidence that with repeated visits and more iterative discussions, as in the case of School #142, that possibilities for addressing these concerns slowly develop out of dialogue.

2. Responsiveness

The action research process responded well to the demands of individual participants as well as the context within which they worked. Following up on conclusions of the value criterion, there was a high degree of sensitivity on the part of the school adminsitration to the level of impact the project would have on the teaching staff. In addition, the project successfully responded to the interests of both the private facility management company (to focus on their role as facility managers in several of these schools) and the school district (to develop a process that could be used by others in the district). The private management company has repeatedly referred the study for support of its positive role in the schools, and the school district has indicated after reviewing the final document that the process could be very useful in future efforts to address environmental concerns. Both groups have appeared to have gotten what they wanted from the project.

Formulating the findings of the study in such as way as to respond to the many audiences was difficult. Some findings may have been perceived by a few schools in the study as adversely affecting their standing in the district due to problems that were uncovered for which the school district might hold them accountable for. This was the case for School #138 as well as School #142, but for different reasons. As stated earlier the principal of School #138 perceived the study as a set-up, as a comparison school to the privately managed schools. School #142's case report was included in an Action Plan to the State of Maryland resulting in the state finding more reasons why the school should be reconstituted instead of viewing the case report as a proactive step to improving environmental quality in the school.

3. Accessibility

The research procedures and activities are sufficiently accessible to be available to anyone in the school district who might wish to adopt them. One of the explicit goals of the project was to develop a process by which other schools could diagnosis environmental quality of their school. Unfortunately, due to time constraints, the process tools were not put in an easily usable form as might be necessary or expected; however all procedures and tools used in the project were documented in the appendix of the final report to the district.

4. Economy

The action research process successfully respected participating practioners concerns of devoting time and energy to research activities. This was one of the participating schools' most important criteria. Only four teachers were interviewed per school, all during a single visit, while observations took place that same day. The workshop again lasted 90 minutes after school hours. Surveys that followed for students and the remainder of the teachers were short and specific to the topics discussed in interviews and workshops.

5. Specificity

Research procedures and activities were specifically differentiated from what practitioners normally do in order to generate new insights in that teachers were requested to critically reflect on the impact of the environmental surroundings on their activities in a variety of ways, through an interview process, workshop discussions with other teachers, a takehome worksheet, through a survey, and finally in one case additional workshop discussions between themselves and other teachers and parents.

6. Rigor

The research activities were more rigorous than the activities of participant's everyday professional life in the sense that they were asked to revisit their environmental concerns in several formats over a period of time. Working group members were introduced to a broader notion of environmental quality in schools than they were accustomed of thinking. The common first response of most participants during interviews to the question of what they considered a quality school environment, referred to cleanliness and air quality and only later in the interview thought of other aspects of a quality school environment such as the layouts of their classrooms and how the building functioned. Only later in the process during the workshops, most, but not all members, began to see the wider implications of the physical environment on learning and teaching.

7. Ownership

With the exception of one case (School #142), participants did not take control, ownership or leadership in the action research project. The failure of participants to take ownership in the action research process is the single most important reason why very little action-taking occurred in this project.

School #142 proved to be the exception in that there was one person, the assistant prinicipal who immediately understood the importance of the project for her school, took ownership of, and leadership in the process from the beginning (In fact, School #142 was the first school to agree to participate in the project).

The other four school principals (as well as the prinicipal of School #142) conceptualized the project as a research study, not an action research project aimed at critical environmental change. This misconception was further supported by the negotiation process in which the action researcher began to play the expected role of expert outside researcher: participants would be payed and impact on the school would be as minimal as possible. Goals of "improving environmental quality" and creating a culture of environmental quality improvement may have been seen as academic and not germaine to the everyday running of the school. The case was not made, and plans were not implemented for a more active engagement of the school in an action research process aimed at improving existing conditions. Only School #142 saw the possibilities and was able to make the conceptual shift from a conventional research study to action planning and design.

The organizational structure of the school may have inhibited teachers from taking action not fully owned by, or being of immediate interest to the principal. In several cases, the principals did not take an active role in the process and did not appear to be interested in the results. This lack of attention from the principal may have inhibited the working group from taking the process the next step — their principal was not taking the lead.

Another reason for the lack of ownership in the process was directly related to the ability to commit time to the process. In all cases teachers' schedules did not permit the level of involvement that was necessary to develop a sense of ownership of the process. To many teachers the environmental concerns needed to be addressed *by someone else* and they did not always see the need to take the next step of being responsible for an environmental action plan. In addition, several participants in several schools asked if funds were available from the private company to address the environmental concerns they had prioritized. Once they discovered that no immediate funds were available they quickly lost interest, yet continued to participate for the sake of the exercise.

A last possible reason for the lack of ownership taken by the teachers was that they had had no involvement in the formulation of the goals of the project. Goals were formulated at an administrative level outside their purview. Teachers simply did what they were asked to do: participate in a study with an outside researcher.

8. Competence

It is not immediately clear that the research led to a contribution that was a genuine improvement of understanding and skill beyond prior competence. Comprehensively identifying the many environmental concerns *from the perspective of educational activities and goals*, is not a collective competence many schools possess. For instance, many educators grudgingly live with open plan instructional areas for years, conducting educational programs not necessarily suited for these arrangements. As several teachers remarked, "We make due with what we have."

Again, for School #142 the findings that emerged over three workshops and the dialogue that developed over how to address these problems does indicate some increase in competence of not only the four working group participants, but also several of the SIT members. Without spending more time in each setting it would be difficult to accurately assess the improvement in environmental competence of the working group members of the other four schools. It is clear that there was a raising of awareness of the relative importance of the physical environment of the school towards learning. Whether this raised awareness results in an increase in these teachers' competence in acting on the learning environment to improve conditions is not possible to know at this time.

9. Short-term Impact

The action research project, on balance, did not have an immediate impact on the participating schools' activities, concerns or practice. Again the exception was School #142. The impact of the project on the activities and concerns of School #142 were very evident. Many housecleaning activities (Civic Works Volunteers) took on a new meaning in light of the large number of related environmental concerns. In addition, the results of the process were integrated by the assistant principal into the reconstruction action plan of the school to the State of Maryland. The immediate response from the State was that the school had a lot of work to do with respect to environmental quality. This State response was noted by the principal who had not been paying adequate attention to progress of the project.

10. Long-term Change

It is not clear that the process has critically changed the patterns of action or developed new directions to understanding in the schools in this study. The main reason for not knowing this is that the time of engagement with the schools was too short. In addition, it is clear that real system change can only take place when there is leadership for that change. None of the prinicipals in the study appeared to take any leadership concerning the project assuming that it was short term even as the researcher began to realize he needed to make the case for a long-term strategy for improving environmental quality in schools. Many of the environmental concerns raised highlighted the lack of available resources and addressing these many concerns often stalled at that point. The prinicipal of School #32 stated quite blankly, "We don't have the money to fix these things so why should we even discuss it?"

What might account for this lack of long-term impact of the action research process in these schools? Insights from the organizational development literature will serve here to explain some of the conclusions concerning the action research process followed in this project. The action research process shares many of the tenants of organizational development (OD). Organizational development has been defined within the context of schools as "the process of changing the culture or climate of a school organization by applying knowledge from the behavioral sciences during a period of planned and sustained effort for improving organizational effectiveness" (Hoy & Miskel, 1991; 401). OD involves two distinct phases, one diagnostic, the other intervention, very similar to the phases of action research. OD emphasizes system change primarily at the organizational level of the school, recognizes that the organization's culture is fundamentally conservative and resistant to change, recognizes that OD implies planned change that requires some portion of the school's resources and must be linked into a continuous maintenance and rebuilding program, and finally emphasizes social science knowledge as providing the theoretical and methodological foundations for OD.

From the perspective of the objectives of the diagnostic phase, to gather useful and meaningful data, identify problem areas, and determining the causes of these problems, the action research process followed in this study has been successful. When, however, the objectives of the implementation phase are considered, this study is limited. Following the insights of organizational development literature several reasons can be offered to account for these limitations of the study.

First, although the project views schools as systems, and recognizes change is always systemic, methods of investigation emphasized the psychology of individual experiences of environmental quality to the detriment of understanding organizational experience at the school systems level. As a result, there was no buy-in to the conclusions of the study on the part of facility management services.

Second, resistance to environmental change by administrators was evident in every school. Principals would begin by citing their low operating budget and end by suggesting that nothing could be done anyway. This attitude prevailed regardless of the severity of the environmental concerns identified. In short, the question of what should be done about these environmental concerns was left unanswered by participants (including principals).

Third, the requirement that any environmental change would need to be planned and that it would take additional school resources added to the resistance. From the viewpoint of all participants, there was no time, financial resources or energy to address these environmental concerns. Only one school was willing to take the time and energy to do something even if no financial resources were available.

Finally, it was evident that using methods and theory from behavioral research in architecture was successful in helping identify environmental concerns, but it was unclear that this knowledge was able to move the action research process into the implementation stage without some rethinking with respect to culture change in schools.

CHAPTER 11

CONCLUSIONS

The chapter critically revisits the goal of the dissertation and in so doing provides a summary of the major substantive and methodological findings of this study. Finally, implications for the integration of research and design activities in school settings are discussed.

The goal of this dissertation was to advance the state of knowledge concerning the diagnosis, design and management to environmental quality in schools, as well as the relationship of environmental quality and educational outcomes, through a local context-based investigation of the school as a purposeful organizational system. Meeting this goal involved the investigation of both the nature of environmental quality in schools and the methods required to actively improve environmental quality in local school settings.

The Nature of Environmental Quality

With respect to the investigation of the nature of environmental quality in schools, this dissertation provides a model for case study research that first describes the school as an interacting system of social and physical dimensions in an effort to understand the complexities of environmental quality in schools. This dissertation has demonstrated that the experience of place can be described as a complex set of mutually interacting attributes of environmental quality. Further, these attributes of environmental quality are perceived by occupants of the school to have some relationship to educational outcomes such as student academic performance, student social development and teacher instructional performance. This study also demonstrates that the particular environmental qualities perceived to be influencing the educational process are context-derived. Although there are many similar perceptions among the schools in this study, there was not found to be a universal set of environmental quality attributes that all schools experience equally. For instance, only one school in the study perceived crowding as a factor influencing their educational activities, while only two schools indicated privacy was an influencing factor. This finding supports the premise of this dissertation that environmental quality in schools can most accurately be defined within a particular context. If variation in the perceptions of environmental quality exist between the urban schools in this study, more variation might be expected between urban, suburban and rural contexts, as well as between other urban contexts.

Environmental Quality Concerns

This study found that environmental quality is most often perceived by occupants in the five schools as the provision of physical comfort and health, classroom adaptability, safety and security, building functionality and aesthetics and appearance. It should be noted as well that each school had a slightly different list of critical attributes, however, these five were the most often perceived concerns.

Physical comfort and health issues across schools are thermal comfort, air ventilation, and in some cases noise. Despite the fact that most teachers in all schools felt that the custodial staff and the maintenance staff are perceived as doing all they could do to address problems of thermal comfort and air ventilation, these problems persist. One explanation is that in all of these buildings, the mechanical systems are fast approaching the limit of their life. In addition, the original design of the mechanical systems most likely did not take into account the problems occupants are facing today. These problems are not unique to schools, many other building types built at the same time, during the first attempts at designing energy conscious buildings, are now experiencing similar problems. In addition to the frustration these systems bring, fenestration systems fail as well to provide the natural daylight and fresh air that occupants desire. This problem too is a result of 'sealing' the building to create more efficient, energy conserving buildings. Although these problems will be difficult to surmount financially, they urgently need to be addressed.

Classroom adaptability issues center around teachers' inability to control noise and distractions in open space instructional areas as well as an inability to accommodate cooperative learning activity centers in both open and self-contained classrooms. Considering the central importance of the classroom as the primary place of educational instruction, there has been little systematic thought about how classrooms, open or self-contained, should be designed and arranged to accommodate cooperative learning instructional strategies.

Safety and security issues focus almost exclusively on problems of controlling unlawful entry into the school. There are more concerns over security issues than safety issues which school administrators feel are under their control. Security problems are perceived to be lessened by the installation of buzzer systems, however, the fears and concerns associated with the symbolism of security systems is not easily overcome. Security issues are connected ultimately with concerns over perceived neighborhood safety and security which are clearly on the minds of students, teachers, parents and staff alike. The main safety issue concerns outdoor playground equipment and the state of the building grounds themselves. Play equipment is seen as both unsafe and developmentally inappropriate. Again, addressing the problem of play equipment is stalled by budgetary limits but is an issue that needs to be addressed.

Building functionality issues are somewhat less of a concern than those mentioned above, but when functionality issues do arise they indicate problems with the match or fit between the ideals of the building layout and the realities of changing educational activities and practices. These problems are often systemic, as in the case of at least one school in the study. As some schools begin to move toward more community involvement, building functionality issues will continue to surface.

Aesthetics and appearance are more of an issue with respect to the building grounds than with school interiors. Many occupants of the schools are frustrated by the lack of control their custodial staff has over the upkeep of the building grounds. Much of the explanation for this problem focuses on a down-sized staff, questions of responsibility, and problems with the community's perceived lack of ownership of school grounds. On the other hand, occupants are very satisfied with the job the custodial staff performs within the building. The schools are perceived to be clean and orderly.

The remaining five environmental qualities identified in this study, personalization and ownership, places for social interaction, privacy, sensory stimulation and crowding/ spaciousness are not perceived as being of primary concern for most schools in this study. However, some issues of note did emerge from the interviews and workshops.

Within the school, teachers feel that students have opportunities to express themselves and take ownership of their school. The importance of displaying student work inside and outside the classroom is a universal principal these schools advocate and practice. The real concern is the perception that some individuals in the community have not taken positive ownership of the school grounds.

Although students are not perceived as having many opportunities for privacy, they do have some. Much of this problem stems from teachers not having classrooms that are adaptable enough to provide for private places, although some teachers have found ways to provide for this need.

All teachers feel that their school provides ample sensory stimulation for students. They perceive their schools as being bright and cheerful as well as instructive. Displays of student work and other instructional materials on the surfaces of walls are tangible ways in which this perception is maintained.

Unexpectedly, only one school in the study was seen as being crowded. In most cases, due to lower enrollments, schools are spacious. Even with this fact, teachers do not feel as though they have any control over crowding since it is determined more by district policy and school administrator decisions.

Educational Outcomes

A number of specific environmental quality attributes are perceived by occupants to have an impact on several educational outcomes. Physical comfort and health was perceived to be the environmental quality with the most influence on educational outcomes. Physical comfort and health and classroom adaptability in particular are perceived to have the greatest impact on student academic performance as well as teacher instructional performance. In addition, physical comfort and health, safety and security, and personalization and ownership are the environmental qualities that are perceived to have the greatest impact on student social development.

Teacher perceptions that physical comfort and health issues can have in influence on educational outcomes is supported in the educational research literature (see review by McGuffey, 1982). Physical comfort and health is perceived to influence student behavior, attitudes and mood which can lead to less attention on learning tasks. The same problems and effects of physical comfort and health are perceived to influence a student's social development under certain conditions, with disruptive behavior often the outcome of these influences.

Classroom adaptability, also high on the list of qualities impacting the educational process, is an environmental quality found to be of concern across all schools in this study. Open space is universally perceived by teachers as a major factor effecting students' inability to focus on their work. Distractions from the movement and noise of other classes is believed by teachers to be the prime factor contributing to this low rating of classroom adaptability. These findings are consistent with the environment-behavior research literature (Evans & Cohen, 1987, Weinstein, 1979). In addition, a teacher's performance suffers when he or she cannot use the classroom effectively to facilitate the learning process, with limited space for small group activities and activity centers being mentioned most. These problems of classroom adaptability are perceived to constitute yet an another potentially negative impact on student performance.

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Safety and security issues are seen as having the most impact on students' social development. Many of the problems associated with this outcome are focused on playground safety and perceived low neighborhood quality. Outdoor play environments do not provide an opportunistic setting for rich and varied social interactions between children. Teachers feel that the lack of ownership of the school's playground by some community members also sends a negative message to children. In addition, children often bring many of their adverse social problems into the school, affecting their ability to interact with their peers in structured learning settings.

Finally, this study found an inverse relationship between high-priority environmental concerns and the percent student achievement improvement from 1993-1995. Although this finding is preliminary at best, it may suggest a pattern that deserves further research. Schools with a high number of high-priority environmental concerns tended to exhibit low percentages of student achievement improvement, while schools with a lower number of high priority environmental concerns tended to exhibit higher percentages of student achievement improvement.

Improving Environmental Quality in the Local Context

With respect to the development of a process to improve environmental quality in the local school context, this dissertation illustrated that action research process has the potential of providing the organizational structure for environmental change. The process followed in this dissertation project demonstrated that the action research approach can be effective in diagnosing environmental problems in schools through the development of comprehensive lists of environmental concerns aided by participants in each school. The action research project conducted in these schools did, in one case, demonstrate the process can be effective in facilitating the development of solutions to environmental concerns. By providing a framework for discussing environmental quality, environment-behavior research

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was found to be useful not only in locally defining environmental quality, but also in suggesting alternative transferable solutions.

Within the context of diagnosing problems and generating potential solutions, there was a modest increase in knowledge and awareness of environmental quality on the part of participants. Environmental quality awareness and competence might have been further developed had the researcher been able to sustain the process over a longer length of time, long enough for the process to take on a life of its own. When the researcher left the school setting, in almost every case participants did not take ownership of the process. This is evidence for arguing that there was only a limited or modest development of environmental competence within the school.

Finally, the process of developing a program of change and an action plan to address environmental quality concerns were not sustained except for the partial attempt by one school (see Chapter 10). An explanation of these findings is explored below.

Implementing Change

Difficulties in developing and implementing a plan for environmental change encountered in this project appear to be no different than those experienced by other systematic attempts at culture change in school organizations (Sarason, 1971). According to Sarason (1971), problems related to implementation of change in schools is not a problem of individuals, as much as it is a higher-level problem of school culture. This problem is complicated by the fact that there is an absence of formulated and testable theories of how the school works in terms of processes of change. Sarason presents several reasons for the persistent lack of change in schools. First, the most difficult obstacle in recognizing the problems in schools is that one cannot *see* culture or system of interrelated roles the way one sees individual personalities. Second, first recognizing, then critically examining the universe of alternatives is an important but difficult task. Third, reasons for the failure of the outsider to effect change in schools include the lack of adequate time taken for implementation, the lack of coordination and management of change, the lingering perceptions of historical failures of past proposals, and the failure of proposed ideas to take into account the experience of teachers and principals. Some final reasons for the lack of change, from the perspective of teaching, include the dilemmas of role, the effects of routine and tradition, life in the classroom, irrelevant preparation, and acceptance of the usual ways of teaching and learning.

Collaboration in Facility Design & Management Decision Making

In addition, the bureaucratic structure of schools can be in some cases antithetical to the notion of participation and collaboration. The top-down bureaucratic nature of school organizations provides one of the greatest obstacles to creating a sustained process of environmental quality improvement. At the local level, educational policies, established by competing self-interests of the public, capitalists, administrators, and teacher unions, are not always in the best interests of the schools or school children. School boards are run by the civic elite, superintendents have little control, and central administrations are bureaucratic and reluctant to facilitate change (Borman and Spring, 1984; Mitchell , et.al.; 1985). Mitchell, Marshall & Wirt (1985) found that of seven major policy mechanisms, school finance dominates policy-making while building and facility policy ranks last.

Strategies employed by educational administrators to acquire resources are designed to operate successfully within a tacit, assumptive, policymaking world (Westbrook, 1988). This knowledge is used to circumvent an established, highly formalized system, substituting a more operative system for the improved anticipation, planning, and provision of adequate educational facilities. As a result, educational administrators are often more concerned with securing funds for school facilities than making sure the needs of educational programs are met in the building design. In addition, the articulation between educational goals, objective needs and facility design is often more of a concern for architects than it was for superintendents or principals, who seemed to feel their options are highly constrained due to limited resources and state bureaucratic structures (Westbrook, 1988).

Where issues about managing school facilities are concerned, building providers' interests tend to dominate, or are privileged, over those of school occupants. For example, however laudable, goals of energy efficiency over human comfort on the part of the district to save scarce resources, tends to serve the providers' interests more so than others. The results are facilities biased towards the providers' priorities in which student, teacher and community needs are relegated in importance, or in some cases, absent entirely.

The development of an environmental diagnosis, design and management process with occupants has the potential to transform this situation so that occupant knowledge and values gain a rightful place. Both occupants and providers depend upon each other. To manage better facilities, particularly for occupants, there is a need to develop more awareness of each other's knowledge and experience. The key to integrating occupant and provider knowledge is sharing knowledge through social negotiation, which involves as a first step that parties acknowledge their interdependence and need for better understanding. A collaborative environmental change process is one tool to accomplish this goal. This project illustrated that an environmental diagnosis process conducted collaboratively with occupants, with the intent of identifying and addressing environmental quality concerns is possible. There is evidence that when participants are motivated they can creatively address their environmental concerns. However, what was not fully demonstrated by this project was the ability of the process to facilitate environmental change. From the findings of this dissertation, it is clear that the action research model, if it is to be successful in accomplishing the goal of continuous environmental quality improvement in schools will need to take into account the highly bureaucratic, change-resistant culture of schools. Whether this process can be sustained and institutionalized to provide continuous environmental quality improvements within schools should be the subject of further research.

"Placemaking" Versus Facility Management

This dissertation found that facility management plays an important role in maintaining and improving environmental quality. Four out of the ten environmental qualities identified were perceived as being within the domain of facility management: physical comfort and health, safety and security, personalization and ownership, and aesthetics and appearance. By maintaining these four environmental qualities, facility management is additionally seen, by the schools and by the researcher, as having a role as well in supporting educational activities, goals and outcomes. Privately-managed schools faired somewhat better than match schools in the number of environmental concerns perceived by occupants to be facility management related. However, on the whole, all schools experienced problems that were perceived as under the influence of facility management, as well as under occupants' control.

The corollary of this finding, and implied by the concept of "placemaking," is that educators feel they, their students, and the community as a whole have, by implication, some measure of responsibility, influence and control over the six remaining environmental qualities. For instance, teachers feel that they can take some responsibility for addressing concerns over classroom adaptability, instill a sense of personalization and ownership within their students as well as the surrounding neighborhood residents who use the facility, take advantage of places that foster healthy social interaction, provide places for privacy for students within their classrooms, and maintain an appropriate level of sensory stimulation for their students. In essence, the management of the facility, of the school as a place, is the responsibility of everyone, not just facility managers. In addition, managing the environmental qualities of the school is an on-going process of making and remaking. The character and spirit of classrooms, corridors and cafeterias are made and remade every Fall and Spring with new signs, pictures and decorations that provide the appropriate mood. New places like a reading nook nestled under the main stairs, or a special cafe in the gymnasium are created by using old, odd, or unused spaces discovered by teachers or students. Teachers continuously reinvent their classrooms each year attempting to solve small furniture arrangement problems they could not resolve the year before.

Yet, paradoxically, some teachers lack adequate knowledge about how to effectively utilize, maintain and manage classroom space to support their instructional efforts, such as with cooperative learning strategies. Open instructional areas are perceived as being too distracting and noisy, while some self-contained classrooms are seen as too constraining. In addition, although teachers do not have a strong sense of control over building functionality and crowding/spaciousness, they expect their school administrators to address these issues through educational policy.

It is difficult, if not impossible, to separate an activity from the environmental setting within which it occurs. The thermal, lighting and air quality comfort the facility provides, the cleanliness, orderliness and character a facility exudes, and the quality of spaces within the classroom, all can greatly affect what can and cannot be accomplished in a given facility.

Any school administrator is likely to have a vision of the ideal place for learning. The vision and the reality, however, often do not coincide. The challenge is to make the reality of the school congruent with the ideal vision of the place for learning. It is the responsibility of the administrator to set standards for care and upkeep of facilities and resources. School facilities must be cleaned, protected, preventively maintained, operated, repaired, and environmentally regulated. It is at this level that many administrators begin their efforts to improve the quality of the learning environment.

However, there is growing pressure from educators that indicates administrators are addressing few factors beyond the basic services mentioned. Educators insist that school facilities must be managed to support the educational program needs as well. Assessing the degree to which the school facility helps or hinders the educational activities contained within is a first step in the direction of attaining the vision.

From what has been learned in this study, the environmental qualities of classroom adaptability and building functionality are concerns neither educators nor facility management personnel have been able to appropriately address. Beyond the recognized reduction of classroom size to twenty-five or less students, beyond the standard and critical maintenance services of custodians, and beyond constant shuffling of desks and tables by classroom teachers, are more complex problems of facilities that simply do not effectively support the educational programs contained within them.

How can schools collectively address problems of managing open plan instructional areas with all the visual and acoustic distractions that accompany them? How can schools collectively address problems associated with effectively laying out both open space and self-contained classrooms for cooperative learning and other instructional strategies? How will schools interested increasing the range of community services accommodate these services adequately without adversely affecting their traditional educational program activities? These are questions that require a collaborative effort that integrates the knowledge of educators and school administrators, facility managers, and community organizations and agencies. How can this be accomplished?

First, educators need to become more aware of the potentials and opportunities that the physical setting presents to them — they must become environmentally competent placemakers. This awareness will not come about through in-service programs alone. Rather, actively working to find more appropriate ways to structure their setting for teaching and learning, through an environmental diagnosis, design and management process, can be a positive step forward.

At the same time, facility managers need to become more cognizant of the role the physical environment plays in supporting the educational process. Problems of classroom adaptability and building functionality can be solved through a core competency of space planning: a competency well established in other building types such as office facility management. Either Departments of Facilities must take the lead in providing this type of service, or local schools through their School Improvement Teams must develop or obtain this competency if they are to solve some of the intractable problems classroom teachers have lived with since educational philosophies first began their rapid change a full 30 years ago.

Finally, many of the more difficult emerging building functionality problems faced by several schools in this study concern themselves with connections to community. Although community involvement is at a low ebb at present, there are indications within these schools, and within Baltimore City Public Schools in general, as well as across this country, that the community school concept and community-school partnerships are emerging once again as a partial solution to the problems of urban school districts. These demands will place a even greater pressure on school buildings to expand their services and open up their space to outside community organizations and agencies.

Integrating Research and Design Activities

This dissertation has held an implicit assumption that the activities of research and design can be integrated into a seamless process which begins with environmental diagnosis moves through a stage of action (design and/or management) and arriving at the need for further environmental diagnosis. As stated in the Introduction, Brill (1974) warned of the "unhinging" of evaluation from design, and the need to maintain the link between these two activities by focusing our efforts on helping to support (or challenge) the goals of the organizational system we are attempting to change. This assumption implies the preeminence of context, one of the critical aspects of design.

For the most part, behavioral research in architecture, following the natural sciences, emphasizes the ability to generalize over a wide variety of contexts, and gives little attention to the equally important particularities of context. In attempting to understand goal-oriented systems like organizations, the organizational sciences have begun to rely more on the epistemological presumptions of action science and other alternative research strategies that pay explicit attention to context and change. From the findings of this dissertation, action research offers one promising research strategy for meeting both the goal of developing transferable generalizations and the goal of providing specific design and management solutions grounded in context.

REFERENCES

Ahrentzen, S., & Evans, G. W. (1984). Distraction, privacy, and classroom design. *Environment and Behavior, 16*(4), 437-454.

Ahrentzen, S., Jue, G., , M.A., Evans, G.W. (1982). School environments and stress. In G.W. Evans (Ed.), *Environmental stress*. 224-255. New York: Cambridge.

Alexander, C., Ishikawa, S. & Silverstein, M. (1979). *The timeless way of building*. New York: Oxford University Press.

Alkin, M.C. (1974). *Evaluation and decision making: The title VII Experience*. Center for Study of Evaluation, University of California, Los Angeles, CA.

Altman, I. (1975). *Environment and social behavior*. Monterey, CA: Brooks/Cole.

Altman, I. (1977). Privacy regulation: Culturally universal or culturally specific? *Journal of Social Issues, 33*, 66-87.

Altman, I., & S.M. Low. (1992). *Place attachment. Human Behavior and Environment. Vol. 13*. New York: Plenum.

Anderson, C. S. (1982). The search for school climate: A review of the research. *Review of Educational Research, 52*(3), 368-420.

Argyris, C. & Schon, D.A. (1991). Participatory action research and action science compared: A commentary. In Whyte, W.F. (Ed.) *Participatory action research*. Newbury Park, CA: Sage. 85-96.

Armstrong, D. G. (1975). Open space vs self-contained. *Educational Leadership, January*, 291-295.

Axia, G., Baroni, M.R. & Peron, E.M. (1990). Cognitive assessment of classrooms in childhood and early and late adulthood. *Children's Environments Quarterly, 7*(2), 17-25.

Bacharach, S.B. (Ed.) (1990). *Educational reform: Making sense of it all*. Boston, MA: Allyn & Bacon.

Bakos, M., Bozic, R., & Chapin, D. (1987). Children's spaces: Designing configurations of possibilities. In C. S. Weinstein & T. G. David (Eds.), *Spaces for children: The built environment and child development* . New York: Plenum Press, 269-288.

Baldassari, C., Lehman, S., & Wolfe, M. (1987). Imaging and creating alternative environments with children. In C. S. Weinstein & T. G. David (Eds.), *Spaces for children: The built environment and child development* New York: Plenum Press. 241-268.

Barickman, J. E. (1992). *Schoolwise: Teaching academic patterns of mind*. Portsmouth. N.H. : Boynton/Cook.

Barker, R. G., & Gump, P. V. (1964). *Big school, small school.* Stanford, CA.: Standford University Press.

Bechtel, R.B. (1976). The perception of environmental quality: Some new wineskins for old wine. In Craik, K.H. & Zube, E.H. (Eds.),*Perceiving environmental quality: Research and applications*. 105-122. New York: Plenum Press.

Becker, F. D. (1981). *Workspace: Creating environments in organizations*. New York: Praeger.

Becker, F.D. (1978). *Housing messages.* Stroudsburg, PA: Dowden, Hutchinson and Ross.

Berliner, D. C. (1983). Developing conceptions of classroom environments: Some light on the T in classroom studies of ATI. *Educational Psychologist, 18*(1), 1-13.

Bickmore, L. (1992). Narratives on collaboration: A report of the discussions held September 27-28, 1991, in Snowbird, Utah organized by the Committee on Architecture for Education. Washington D.C.: American Institute of Architects.

Borman, K. & Spring, J. (1984). *Schools in central cities, structure and process.* New York: Longman.

Bourke, S. (1986). How smaller is better: Some relationships between class size, teaching practices, and student achievement. *American Educational Research Journal, 23*(4), 558-571.

Boyer, E.L. (1988). *An imperiled generation: Saving urban schools.* A Carnegie Foundation Special Report. Princeton, NJ.: The Carnegie Foundation for the Advancement of Teaching.

Brody, G. H., & Zimmerman, B. J. (1975). The effects of modeling and classroom organization on the personal space of third and fourth grade children. *American Educational Research Journal, 12*(2), 157-168.

Brophy, J.E. & Good, T.L. (1985). Teacher behavior and student achievement. In Wittrock, M.C. (Ed.) *Handbook of research on teaching. 3rd Edition*. 328-375. New York: MacMillian.

Brubaker, C. W. (1988). These 21 trends will shape the future of school design. *American School Board Journal, 175*(4), 31-33, 66.

Brubaker, C. W. (1989). The impact of technology on educational facilities. *CEFPI's Educational Planner, 27*(6).

Brubaker, C. W. (1990). Education and architecture: Does good design enhance the learning process? *The Pedamorphosis Communique, V6:1*, July.

Bryson, J.M. (1988). *Strategic planning for public and nonprofit organizations*. San Francisco: Jossey-Bass.

CA Dept of Education (1990). *Schools for the twenty-first century* No. California Department of Education, Field Services Branch, Sacramento, CA.

Campbell, J.P. (1977). On the nature of organizational effectiveness. In Goodman, P.S. & Pennings, J.M. *New perspectives on organizational effectiveness*. San Fransciso: Jossey-Bass. 13-55.

Carr, W. & Kemmis, S. (1986). *Becoming critical : education, knowledge, and action research*. Philadelphia, PA: Falmer Press.

Cash, C. S. (1993). *Building condition and student achievement and behavior*. Doctoral dissertation, University of Maryland.

Centra, J. A., & Potter, D. A. (1980). School and teacher effects: An interrelational model. *Review of Educational Research, 50* (2), 273-291.

Chan, T.C. (1979). The impact of school building age on the achievement of eighth-grade pupils from the public schools in the State of Georgia. Doctoral dissertation, University of Georgia.

Chein, I., Cook, S.W., and Harding, J. (1948). The field of action research. *American Psychologist, 3*, 43-50.

Christopher, G. (1992). Effect of architecture on education. In *Future schools for California: Quality school design*. San Diego, California: American Institute of Architects, Committee on Architecture for Education.

Cochran-Smith, M. and Lytle, S.L. (Eds.) (1993). Inside/outside : teacher research and knowledge. New York : Teachers College Press.

Cohen, L. & Manion, L. (1994). *Research methods in education*. Fourth Edition. London: Routledge.

Cohen, R., Goodnight, J. A., Poag, C. K., Cohen, S., Nichol, G. T., & Worley, P. (1986). Easing the trasition to kindergarten: The affective and cognitive effects of different spatial familiarization experiences. *Environment and Behavior, 18*(3), 330-345.

Colven, R. (1990a). The quality of the physical environment of the school and the quality of education: Conclusions of a seminar (Lidingo, Sweden, 17-21 October 1988). Organization for Economic Cooperation and Development, Paris, France; Programme on Educational Building.

Colven, R. (1990b). *Today's design — Tommorrow's use: Continuity in the planning process.* Dissertation from the Royal Institute of Technology-Stockholm, School of Architecture-Department of Form and Environment.

Conners, D. A. (1983). The school environment: A link to understanding stress. *Theory Into Practice*, 15-20.

Cooper, C. (1974). The house as a symbol of self. In Lang, J. et. al. (Eds.), *Architecture and human behavior*. Stroudsberg, PA: Dowden, Hutchinson and Ross.

Corey, S. (1952). Action research and the solution of practical problems. *Educational Leadership, 9*(8), 478-84.

Cotterell, J. L. (1984). Effects of school architectural design on student and teacher anxiety. *Environment and Behavior, 16*(4), 455-479.

Craik, K.H. & Zube, E.H. (1976). *Perceiving environmental quality: Research and applications*. New York: Plenum Press.

Crow, T.D. (1990). Designing safer schools. *School Safety*, 9-13.

Crumpacker, S. S. (1992) *The experience of school as place.* Dissertation, Curry School of Education, University of Virginia.

Cunningham, J. B. (1993). *Action research and organizational development*. Westport, CT: Praeger.

Daly, J. A., & Suite, A. (1981). Classroom seating choice and teacher perceptions of students. *Journal of Experimental Education, 50*(2), 64-69.

David, T. G. (1981). Classroom physical environment. In *Enclyclopedia of educational research* 274-279.

deCarlo, G. C. (1974). Why/ How to build school buildings. In G. Coates (Eds.), *Alternative learning environments* . Stroudsburg, PA: Dowden, Hutchinson & Ross, Inc.. 96-108.

Dierdorff, W. H. (1989). How building design can enhance support services. *School Business Affairs* (July), 14-19.

Duffy, F. (1974). Office design and organizations 1: A theoretical basis. *Environment and Planning B*, 1, 105-118.

Duffy, F. (1980). Office buildings and organizational change. In King, A. (Ed.). *Buildings and society*. London: Routledge & Kegan Paul. 254-280.

Dunwoody, T.J. (1988). *Designing schools with maintenance in mind.* One of a Series of Briefs Prepared by the American Institute of Architects National Committee on Architecture for Education. Addressing Ways and Means of Reducing Costs in the Design and Delivery of Educational Facilities. Washington, D.C.: American Institute of Architects.

Ebbutt, D. (1985). Educational action research: Some general concerns and specific quibbles. In Burgess, R. (Ed.) *Issues in educational research: Qualitative methods*. Lewes: Falmer.

Edwards, M. M. (1991) *Building conditions, parental involvement and student achievement in the D.C. Public School System.* Masters, Georgetown University.

Elden, M. & Levin, M. (1991). Cogenerative learning: Bringing participation into action research. In Whyte, W.F. (Ed.) *Participatory action research*. Newbury Park, CA: Sage. 127-142.

Elias, S. F., & Elias, J. W. (1976). Curiosity and openmindedness in open and traditional classrooms. *Psychology in the Schools, 13*(2), 226-232.

Elliot, J. (1985). Facilitating action research in schools: Some dilemmas. In Burgess, R. (Ed.) *Field methods in the study of education*. p. 235-62. Lewes: Falmer Press.

Englehardt, D. (1988). Can space motivate (or demotivate) science teachers? *CEFP Journal, 26*(4), 12-16.

Evans, G. W., & Lovell, B. (1979). Design modification in an open-plan school. *Journal of Educational Psychology, 71*(1), 41-49.

Evans, G. W., Kliewer, W., & Martin, J. (1991). The role of the physical environment in the health and well-being of children. In H. E. Schroeder (Eds.), *New directions in health psychology assessment*. New York: Hemisphere Publishing Corporation. 127-157.

Evans, G.W. & Cohen, S. (1987). Environmental stress. In Stokols, D. & Altman, I. (Eds.) *Handbook of environmental psychology*. 571-610. NY: Wiley.

Evans, G.W. (In press). Learning and the physical environment. In Falk, I. & Dierking, L. (Eds.) *Public institutions for personal learning: The long-term impacts of museums.* NY: American Association of Museums.

Farbstein, J. & Kantrowitz, M. (1991). Design research in the swamp: Toward a new paradigm. In Zube, Ervin and Gary T. Moore, *Advances in Environment, Behavior, and Design. Volume 3*. New York: Plenum Press, 297-318.

Feagin, J., Orum, A., & Sjoberg, G. (Eds.) (1991). *A case for case study.* Chapel Hill: University of North Carolina Press.

Fisher, C. W. (1975). *Effects of program openness and architecture on educational environments* No. Far West Laboratory for Educational Research and Development.

Fiske, E. B. (1990). Lessons: Will new school buildings be symbols of a new educational system? *The New York Times*, February 21.

Fiske, E. B. (1991). *Smart schools, smart kids: Why do some schools work?* New York: Simon & Schuster.

Fraser, B. J., & Fisher, D. L. (1981). Effects of classroom openness on student achievement and attitudes. Unpublished manuscript.

Freire, P. (1973). *Pedagogy of the oppressed*. New York: Seabury.

Friedmann, A., Zimring, C., Zube, E. (1978). *Environmental design evaluation*. New York: Plenum Press.

Fulks, D. G. (1985). Invigorating interior design makes schools more conducive to learning. *American School Board Journal, 172*(8), 31.

GAO. (1995). *The Condition of School Buildings*. Washington D.C.: General Accounting Office.

Garbarino, J. (1980). Some thoughts on school size and its effects on adolescent development. *Journal of Youth and Adolescence, 9*(1), 19-31.

Genevro, R. (1990). New Schools for New York: New York City school designs: A project of the Architectural League of New York and the Public Education Association. *Teachers College Record, 92(*2), 248-271.

Goldberg, B., & Bee, C. (1991). *Redesigning schools: Architecture and restructuring* No. American Federation of Teachers, Washington, D.C. Center for Restructuring.

Goldberger, P. (1990). And the winning school is — Smaller. *The New York Times*. May 27.

Good, T.L. & Brophy, J.E. (1985). School effects. In Wittrock, M.C. (Ed.) *Handbook of research on teaching. 3rd Edition*. 570-602. New York: MacMillian.

Good, T.L. & Brophy, J.E. (1985). School effects. In Wittrock, M.C. (Ed.), *Handbook of research on teaching*. 570-602. New York: MacMillian.

Gordon, D. E. & Stubbs, M.S. (1988). Programming. In *Architecture*, May, 203-210.

Goswami, D. and Stillman, P.R. (Eds.) (1987). *Reclaiming the classroom: Teacher research as an agency for change*. Upper Montclair, N.J.: Boynton/Cook.

Graves, B.E. (1993). *School ways: The planning and design of America's schools*. New York: McGraw-Hill.

Gregory, R. P. & Allebon, J. (1988) *Action research in the secondary school : the psychologist as change agent.* New York : Routledge.

Guba, E.G.,and Lincoln, Y.S. (1981). *Effective evaluation.* San Francisco: Jossey-Bass.

Gump, P. V. (1974). Operating environments in schools of open and traditional design. *School Review, August,* 575-602.

Gump, P. V. (1978). School environments. In I. Altman & J. F. Wohlwill (Eds.), *Children and the environment* (131-174). New York: Plenum Press.

Gump, P. V. (1987). School and classroom environments. In D. Stokols & I. Altman (Eds.), *Handbook of environmental psychology* (691-732). New York: Wiley.

Gump, P. V., & Ross, R. (1977). The fit of milieu and programme in school environments. In H. McGurk (Eds.), *Ecological factors in human development* (77-89). New York: North-Holland.

Gump, P. V.,& Good, L. R. (1976). Environments operating in open space and traditionally designed schools. *Journal of Architectural Research, 5*(1).

Gump, P.V. & Ross, R. (1979). What's happened in schools of open design? *J.S.A.S. Catalogue: Selected Documents in Psychology, 9*(12), 1816-1836.

Guthrie, J.W., Kleindorfer, G.B., Levin, H.M., and Stout, R.T. (1971). *Schools and inequality.* Cambridge, MA: MIT Press.

Habermas, J. (1971). *Knowledge and human interests.* Boston, MA: Beacon.

Habermas, J. (1973). *Theory and practice.* Boston, MA: Beacon.

Hart, R. A. (1987). Children's participation in planning and design: Theory, research and practice. In C. S. Weinstein & T. G. David (Eds.), *Spaces for children: The built environment and child development* (217-239). New York: Plenum Press.

Hartley, J. F. (1994). Case studies on organizational research. In Cassell, C. & Symon, G. (Eds.) *Qualitative methods in organizational research: A practical guide.* 208-229. Thousand Oaks, CA: Sage.

Hawkins, H. (1990). The Interface Project, Texas A&M University. *Education Week,* February 21.

Heyns, B. (1986). Educational effects: Issues in conceptualization and measurement. In Richardson, J.G. (Ed.), Handbook of theory and research for the sociology of education. 305-340. New York: Greenwood Press.

Hoag, R., & Johnson, W. (1975). Open and traditional classrooms: A comparative study. *Man-Environment Systems, 5*(4), 263-264.

Hollingsworth, S. & Cody, A. (1994). Teacher research and urban literacy education : lessons and conversations in a feminist key. New York : Teachers College Press.

Holt, J. (1975). Involving the users in school planning. In T. G. David & B. D. Wright (Eds.), *Learning environments* (181-203). Chicago, Ill.: The University of Chicago Press.

Horowitz, P., & Otto, D. (1973). *The teaching effectiveness of an alternative teaching facility* No. University of Alberta, General Faculties Council, Committee to Investigate Teaching.

Horwitz, R.A. (1979). Effects of the "Open Classroom." In Walberg, H.J. (Ed.) *Educational environments and effects: Evaluation, policy and productivity*. Berkeley, CA: McCutchan. 275-292.

Hoy, J. M. (1980) A survey of secondary student and teacher attitudes in selected schools in the Commonwealth of Pennsylvania differing in architectural design. Doctoral Thesis, Pennsylvania State University.

Hoy, W. K. & Miskel, C. (1991). Organizational effectiveness of schools. *Educational administration: Theory, research, and practice*. New York: McGraw-Hill. 373- 408.

Ingalls, W.R. (1986). *Program/Planning*. One of a Series of Briefs Prepared by the American Institute of Architects National Committee on Architecture for Education. Addressing Ways and Means of Reducing Costs in the Design and Delivery of Educational Facilities. Washington, D.C.: American Institute of Architects.

Interface Project. (1990). *The Interface Project: The interface between school facility and student learning. Position paper on facilities and learning*. Texas A & M University.

Jacobs, J. (1961). *The death and life of great American cities*. New York: Random House.

Kaplan, A. (1992). Today's school designs require maximum flexibility. *School Business Affairs*, January, 4-7.

Kelly, A. (1985). Action research: What is it and what can it do? In Burgess, R. (Ed.) *Issues in educational research: Qualitative methods*. 129-51. Lewes: Falmer Press.

Kemmis, S. (1982). *The action research reader*, Victoria, Deakin University.

King, N. (1994). The qualitative research interview. In Cassell, C. & Symon, G. (Eds.) *Qualitative methods in organizational research: A practical guide*. 123-146. Thousand Oaks, CA: Sage.

King, T. (1990). The future is now at Saturn School of Tomorrow. *The Electronic School*, September, A14-A15.

Konar, E. & Sundstrom, E. (1986). Status demarcation and office design. In Wineman, J.D. (Ed.) *Behavioral issues in office design*. New York: Van Nostrand Reinhold. 203-223.

Kozol, J. (1991). *Savage Inequalities: Children in American schools*. New York: Harper Collins.

Krueger, R.A. (1994). *Focus groups: A practical guide for applied research*. Newbury, CA: Sage.

Kuhn, T. (1970). *The structure of scientific revolutions*. Chicago, Ill.: University of Chicago.

Lackney, J. (1994a). *Educational facilities: The impact and role of the physical environment of the school on teaching, learning and educational outcomes*. School of Architecture and Urban Planning, University of Wisconsin-Milwaukee: Johnson Controls Institute for Environmental Quality in Architecture Monograph Series, Center for Architecture and Urban Planning Research, Report 94-4.

Lackney, J. (1994b). Assessment of environmental quality in schools: A theoretical framework and an assessment procedure. Paper presented at the *ACSA West Central Regional Conference: Environmental Quality: Programming, Design, Construction and Management*, Milwaukee, Wisconsin, October 8.

Lather, P. (1986). Research as Praxis. *Harvard Educational Review, 56*(3), 257-277.

Lewin, K. (1946). Action research and minority problems. *Journal of Social Issues, 2*, 34-46.

Lewy, A. (1990). Formative and summative evaluation. In Walberg, H.J. and Haertel, G.D. *The International Encyclopedia of Educational Evaluation*. New York, NY: Pergamon. 26-28.

Lincoln, Y.S. & Guba E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.

Loughlin, C.E. & Suina, J.H. (1982). *The Learning environment: An instructional strategy*. New York: Teachers College Press.

MacPherson, J. C. (1984). Environments and interaction in row-and-column classrooms. *Environment and Behavior, 16*(4), 481-502.

Marans, R.W. (1976). Perceived quality of residential environments: Some methodological issues. In Craik, K.H. & Zube, E.H. (Eds.),*Perceiving environmental quality: Research and applications*. 123-147. New York: Plenum Press.

Marshall, C., Mitchell, D. & Wirt, F. (1985). Building a taxonomy of state education policies. *Peabody Journal of Education* , *62*, 7-47.

McDougall, H. A. (1993). *Black Baltimore: A new theory of community*. Philadelphia, PA: Temple University Press.

McGuffey, C.W. & Brown, C.L. (1978). The impact of school building age on school achievement in Georgia. *CEFP Journal 16*, 6-9.

McGuffey, C.W. (1982). Facilities. In Walberg, H.J. (Ed.) *Improving educational standards and productivity: The research basis for policy*. Berkeley, CA: McCutchan Publishing. 237-288.

McKee, W. T., & Witt, J. C. (1990). Effective teaching: A review of instructional, and environmental variables. In T. B. Gutkin & C. R. Reynolds (Eds.), *The handbook of school psychology* (821-846). New York: John Wiley & Sons.

McPartland, J.M. & Karweit, N. (1979). Research on educational effects. In Walberg, H.J. (Ed.), *Educational environments and effects: Evaluation, policy and productivity*. Berkeley, CA: McCutchan.

Min, B. (1988). *Research utilization in environment-behavior studies: A case study analysis of the interaction of utilization models, context, and success*. (Doctoral dissertation, University of Wisconsin-Milwaukee.) Ann Arbor, MI: University Microfilms.

Miner, B. (1992). Students learn best in small schools: Tennessee study follows 6,500 children for 4 years. *Rethinking Schools, 6*: 2, 15.

Moore, G.T. & Lackney, J.A. (1994). *Educational facilities: Research analysis and design patterns*. Center for Architecture and Urban Planning Research. School of Architecture and Urban Planning. University of Wisconsin-Milwaukee.

Moore, G.T. (1984). New directions in environment-behavior research in architecture. In Snyder, J.C. (Eds.) *Architectural research. Environmental Design Series*. 95-112. New York: Van Nostrand Reinhold.

Moore, G.T. (1987). The physical environment and development in child care centers. In C.S. Weinstein and David, T. (Eds.) *Spaces for children*. 41-72. NY: Plenum.

Moos, R. H. (1979). *Evaluating educational environments*. New York: Jossey-Bass.

Morrow, L. M., & Weinstein, C. S. (1982). Increasing children's use of literature through program and physical design changes. *Elementary School Journal, 83*(2), 131-137.

Nevo, D. (1983). The conceptualization of educational evaluation: An analytical review of the literature. *Review of Educational Research, 53*(1), 117-128.

New York State School Boards Association. (1989). *The bricks-and-mortar trusteeship: School boards and school facilities planning. A position paper.* Albany, N.Y.: Author.

Newman, O. (1972). *Defensible space: Crime prevention through urban design*. New York: Macmillan.

Nixon, J. (1981). *A teachers guide to action research*. London: Grant-McIntyre, Ltd.

O.E.C.D. (1989). *Schools and quality: An international report*. Paris, France: Organization for Economic Cooperation and Development.

Oja, S.N. & Smulyan, L. (1989). *Collaborative action research : A developmental approach*. New York : Falmer Press.

Oquist, P. (1978). The epistemology of action research. *ACTA Sociologica 21*, 143-163.

Patterson, L. et. al. (Eds.) *Teachers are researchers: Reflection and actio*n. Newark, Del., USA : International Reading Association.

Patterson, L., Santa, C.M., Short, K.G., Smith, K. (1993). *Teachers are researchers: Reflection and action*. Newark, DE: International Reading Association.

Patton, M. Q. (1990). *Qualitative evaluation and research methods*. Newbury Park: Sage.

Pesanelli, D. (1990). Education takes to the streets. *The Futurist*(March-April), 29-33.

Plumley, J.P. Jr. (1978). *The impact of school building age on the academic achievement of pupils from selected schools in the State of Georgia*. Doctoral dissertation, University of Georgia.

Preiser, W. F. E., Rabinowitz, H. A., & White, E. T. (1988). *Post-occupancy evaluation*. New York: Van Nostrand Reinhold.

Proshansky, E., & Wolfe, M. (1975). The physical setting and open education. In T. G. David & B. D. Wright (Eds.), *Learning environments* (31-48). Chicago, Ill.: The University of Chicago Press.

Pynoos, J. & Regnier, V. (1991). Improving residential environments for frail elderly: Bridging the gap between theory and application. In Birren, J., Ludden, J. Rowe, J. & Deutchman, D. (Eds.), *The concept and measurement of the quality of life in the frail elderly*. New York: Academic Press.

Rabinowitz, Harvey Z. (1988). The uses and boundaries of post occupancy evaluation. In Lawrence, D., R Habe, A. Hacker and D. Sherrod (Eds.) *People's Needs/Planet Management: Paths of Co-Existence: The Proceedings of the Nineteenth Annual Conference of the Environmental Design Research Association*. Pomona, California, 273-276.

Ramasubramanian, L. (1994). Participatory research concepts. Unpublished Manuscript: Area of Concentration Paper. School of Architecture and Urban Planning. University of Wisconsin-Milwaukee.

Rapoport, A. (1970). An approach to the study of environmental quality. In Sanoff, H. & Cohn, S. (Eds.) Proceedings of the 1st Annual Environmental Design Research Association Conference. Chapel Hill, N.C.: EDRA.

Rapoport, R.N. (1970). Three dilemmas of action research. *Human Relations, 23*, 499-513.

Regnier, V. (1984). *Beverly Hills congregate residence: Participatory design and planning feasibility analysis.* Final Reports (Summary, Community & Technical). Andrus Gerontology Center. University of Southern California.

Reyes, P. (1990). *Teachers and their workplace: Commitment, performance and productivity.* Newbury Park, CA: Sage.

Richardson, E. (1970). The physical setting and its influence on learning. In *Environmental psychology: Man and his physical setting* (386-397). New York: Holt, Rinehart and Winston, Inc.

Rieselbach, A. (1990). Building and learning: New York City school designs: A project of the Architectural League of New York and the Public Education Association. *Teachers College Record, 92*(2), 272-285.

Rivlin, L. G., & Rothenberg, M. (1976). Design implication of space use and physical arrangements in open education classes. In H. M. Proshansky, W. H. Ittelson, & L. G. Rivlin (Eds.), *Environmental psychology: Man and his physical setting* (479-489). New York: Holt, Rinehart and Winston, Inc.

Rivlin, L. G., Rothenberg, M., Justa, F., Wallis, A., & Wheeler, F. G. (1974). Children's conceptions of open classroom through use of scaled models. In D. H. Carson (Eds.), *Man Environment Interactions, Part 12* (151-160). Stroudsburg, PA: Dowden, Hutchinson & Ross.

Ross, R., & Gump, P. V. (1978). Measurement of designed and modified openness in elementary school buildings. In S. Weisemann, A. J., & R. Brauer (Ed.), *EDRA 8: Priorities for environmental design research*, (243-253). Environmental Design Research Association.

Rothenberg, J. (1989). The open classroom reconsidered. *Elementary School Journal, 90*(1), 69-86.

Rusk, D. (1996). Baltimore unbound: A strategy for regional renewal. Baltimore, MD.: The Abell Foundation.

Rutman, L. (1977). *Evaluation research methods: A basic guide*. Beverly Hills, CA: Sage. 69.

Sanoff, H., & Barbour, G. (1975). An alternative strategy for planning an alternative school. In T. G. David & B. D. Wright (Eds.), *Learning environments* (205-223). Chicago, Ill.: The University of Chicago Press.

Sarason, S. B. (1971). *The culture of the school and the problem of change*. Boston: Allyn and Bacon, Inc.

Schmuck, R. A. (1990). Organizational development in schools: Contemporary concepts and practices. In T. B. Gutkin & C. R. Reynolds (Eds.), *The handbook of school psychology* (899-919). New York: John Wiley & Sons.

Schneekloth, L. & Shibley, R. (1981). On owning a piece of the rock: Participatory planning and design. *EDRA 12 Proceedings*. Washington, D.C.: Environmental Design Research Association.

Schneekloth, L.H. (1987). Advances in practice in environment, behavior, and design. In Zube, E.H. & Moore, G.T. (Eds.), *Advances in environment, behavior, and design, 1*. New York: Plenum Press. 307-334.

Sebba, R. (1986). Architecture as determining the child's place in its school. Edusystems 2000 International Congress on Educational Facilities, Values, and Contents (Jerusalem, Israel).

Sheat, L.G. & Beer, A.R. (1989). User participation — A design methodology for school grounds design and environmental learning? *Children's Environments Quarterly, 6:2/3*, 15-30.

Shibley G. (1985). Building evaluation in the main stream. In *Environment and Behavior, Vol.17*, (1), 7-24.

Smith, L. (1990). Hypermedia lessons open the classroom door to exploration. *The Electronic School. September*, A16-A17.

Somer, R. (1973). Evaluation, yes; Research maybe. *Representative Research in Social Psychology, 4*, 127-133.

Sommer, R. & Amick, T.L. (1984). *Action research: Linking research to organizational change*. Center for Consumer Research, University of California, Davis, CA.

Sommer, R. (1968). Hawthorne dogma. *Psychological Bulletin, 70* (6), 592-595.

Sommer, R. (1969). Designed for learning. In *Personal space: The behavioral basis of design* (98-119). Englewood Cliffs, N.J.: Prentice-Hall.

Sommer, R. (1974). Movable chairs, fixed beliefs and hard classrooms. In *Tight places: Hard architecture and how to humanize it* (81-101). Englewood Cliffs, N.J.: Prentice-Hall.

Sommer, R. (1977). Action research. In D. Stokols (Ed.) *Perspectives on environment & behavior: Theory, research & applications*. NY: Plenum.

Sommer, R. (1983). Action research is formative: Research at the Saskatchewan Hospital, 1957-61. *The Journal of Applied Behavioral Science, 19* (4), 427-438.

Sonnier, I. L. (1981). The open classroom: Quantity and quality education. *Education, 102*(2), 124-129.

Stake, R. (1977). Formative and summative evaluation. In Hamilton, D. et. al. (Eds.) *Beyond the numbers game: A reader in educational evaluation*. London: MacMillan. 156-57.

Stake, R.E. (1995). *The art of case study research: Perspectives on practice*. Newbury, CA: Sage.

Steele, F.I. (1973). *Physical settings and organizational development*. Reading, MA: Addison-Wesley.

Steele, F.I. (1986). The dynamics of power and influence in workplace design and management. In Wineman, J.D. (Ed.), *Behavioral issues in office design*. New York: Van Nostrand Reinhold. 43-63.

Steers, R. M. (1977). Problems in the measurement of organizational effectiveness. *Administrative Science Quarterly, 20*, 546-558.

Steyaert, C. & Bouwen, R. (1994). Group methods of organizational analysis. In Cassell, C. & Symon, G. (Eds.) *Qualitative methods in organizational research: A practical guide*. 208-229. Thousand Oaks, CA: Sage.

Stokols, D. (1986). Transformational perspectives on environment and behavior. In Ittelson, W.H., Asai, M. & Ker, M. (Eds.) C*ross-cultural research in environment and behavior*. Tucson, AZ: University of Arizona.

Stuebing, S., Giddings, J. & Cousineau, L.K. (1992). *Technology-rich learning environments in elementary and secondary schools: An interactive study of physical settings and educational change*. Prepared for the AERA Annual Meeting, San Francisco, CA.

Stuebing, S., Knox, L., Petrakaki, M., & Giddings, J. (1991). *Vision for the future learning environment: An Apple Classrooms of Tomorrow research project*. Architecture and Building Science, School of Architecture, New Jersey Institute of Technology and Apple Classrooms of Tomorrow.

Sundstrom, E. (1986). *Work places: The psychology of the physical environment in offices and factories*. New York: Cambridge University Press.

Sundstrom, E. (1987). Work environments: offices and factories. In D. Stokols & I. Altman (Eds.), Handbook of environmental psychology (pp. 733-782). New York: John Wiley & Sons.

Susman, G.I. & Evered, R.D. (1978). An assessment of the scientific merits of action research. *Administrative Science Quarterly, 23*, 582-602.

Susman, G.I. (1983). Action research: A sociotechnical systems perspective. In Morgan, G. Beyond method: Strategies for social research. Beverly Hills, CA: Sage. 95-113.

Sutner, S. (1991, June 20). Education found lagging in dilapidated schools. *The Washington Post*, p. 8.

Traub, R. E., Weiss, J., Fisher, C. W., & Musella, D. (1972). Closure on openness: Describing and quantifying open education. *Interchange, 3(*2), 69-84.

Trist, E., Higgins, G., Murray, H., & Pollack, A. (1963). *Organizational choice*. London: Tavistock.

Usdan, M.D. & Schwarz, P. (1994). Top-down or bottom-up? *Education Week, XIV*: 12. November, 23. p.44.

Wachs, T. D. (1987). Developmental perspectives on designing for development. In C. S. Weinstein & T. G. David (Eds.), Spaces for children: The built environment and child development (291-307). New York: Plenum Press.

Walker, L. (1993). School design in the 1990s: Outlook and prospects. In Herbert, E. and A. Meek (Eds.) *Children, learning & school design: A First National Invitational Conference for Architects and Engineers*. Winnetka, Il.: Winnetka Public Schools. 7-17.

Weinstein, C. S. & David, T. G. (Eds.) (1987). *Spaces for children: The built environment and child development*. New York: Plenum Press.

Weinstein, C. S. (1977). Modifying student behavior in an open classroom through changes in the physical design. *American Educational Research Journal, 14*(3), 249-262.

Weinstein, C. S. (1979). The physical environment of the school: A review of the research. *Review of Educational Research, 49*(4), 577-610.

Weinstein, C. S. (1980). Guidelines for designing classroom environments. In R. R. Stough A. Wandersman and A. Clark (Ed.), *EDRA 11, Optimizing environments: Research, practice and policy*, Charleston, South Carolina: Environmental Design Research Association.

Weinstein, C. S. (1981). Classroom design as an external condition for learning. *Educational Technology* (August), 12-19.

Weinstein, C. S., & Pinciotti, P. (1988). Changing a schoolyard: Intentions, design decisions, and behavioral outcomes. *Environment and Behavior, 20*(3), 345-371.

Weinstein, C.S. & Woolfolk, A.E. (1981). Classroom design and impression formation: A new area of research. *Contemporary Educational Psychology 6*, 383-386.

Weisman, G.D. (1983). Environmental programming and action research. *Environment and Behavior, 15*:3, 381-408.

Westbrook, K.C. (1988). Decisionmaking in the planning and design of Illinois Public School Facilitics. Paper presented at the Annual Meeting of the American Education Finance Association (Lubbock, TX, March 16-19, 1988). ERIC Report ED 303 913. Washington D.C.: U.S. Department of Education, Office of Educational Research and Improvement.

Whyte, W. F. (1984). *Learning from the field*. Newbury Park, CA: Sage

Whyte, W. F. (1991a). *Participatory Action Research*. Newbury Park, CA: Sage

Whyte, W.F. (1991b). *Social theory for action: How individuals and organizations learn to change*. Newbury Park, CA: Sage.

Whyte, W.F. (1989). *Action research for the twenty-first century*. American Behavioral Scientist, 32 (5, May/June).

Wiatrowski, M. D., Gottredson, G., & Roberts, M. (1983). Understanding school behavior disruption: Classifying school environments. *Environment and Behavior, 15(*1), 53-76.

Winett, R. A., Battersby, C. D., & Edwards, S. M. (1975). The effects of architectural change, individualized instruction, and group contingencies on the academic performance and social behavior of sixth graders. *Journal of School Psychology, 13*(1), 28-40.

Winter, R. (1987). Action-research and the nature of social inquiry : professional innovation and educational work. Brookfield, Vt. : Gower.

Winter, R. (1989). *Learning from experience : principles and practice in action-research*. New York : Falmer Press.

Wisner, Ben, David Stea, and Sonia Kruks. (1991). Participatory and action research methods. In Zube, Ervin and Gary T. Moore, *Advances in Environment, Behavior, and Design. Volume 3*. New York: Plenum Press, 271-296.

Witzling, L.P., Childress, H., Lackney, J.A. (1994). *Environmental quality in the workplace*. Johnson Controls Institute for Environmental Quality in Architecture. Working Paper Series. University of Wisconsin-Milwaukee, School of Architecture and Urban Planning: Center for Architecture and Urban Planning Research.

Wolfe, M. (1986). Institutional settings and children's lives: An historical, developmental and environmental perspective on educational facilities. *Edusystems 2000 International Congress on Educational Facilities, Values, and Contents* (Jerusalem, Israel).

Wolfe, M., & Rivlin, L. G. (1987). The institutions in children's lives. In C. S. Weinstein & T. G. David (Eds.), *Spaces for children: The built environment and child development* (89-114). New York: Plenum Press.

Woods, P. (1986). Inside schools : ethnography in educational research. Boston : Routledge & K. Paul.

Wyon, D.P. (1970). Studies of children under imposed noise and heat stress. *Ergonomics. 13(*5).

Zimring, C., & Barnes, R. D. (1987). Children's environments: Implications for design and design research. In C. S. Weinstein & T. G. David (Eds.), *Spaces for children: The built environment and child development* (309-318). New York: Plenum Press.

Zimring, Craig M. (1988). Post-occupancy evaluation and implicit theories of organizational decision-making. In Lawrence, D., R Habe, A. Hacker and D. Sherrod (Eds.) *People's Needs/Planet Management: Paths of Co-Existence: The Proceedings of the Nineteenth Annual Conference of the Environmental Design Research Association*. Pomona, California, 277-280.

Zube, (1980). *Environmental evaluation*. New York: Plenum Press.

Quality In School Environments:
A Multiple Case Study of the Diagnosis, Design and Management of Environmental Quality in Five Elementary Schools in the Baltimore City Public Schools from an Action Research Perspective

by

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Doctor of Philosophy
in Architecture

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Volume II

PART III

CASE STUDY REPORTS AND PROCESS MANUAL

CASE STUDY REPORT:

Dr. Rayner Browne Elementary School #25

PROJECT OVERVIEW

This report documents specific environmental quality concerns of one of five elementary schools in the Baltimore City Pubic Schools. This report serves not only as a record of the environmental quality concerns themselves, but also describes the assessment process within which these concerns have arisen.

This section provides an summary of the project objectives, problem and approach. and process and procedures of the Baltimore Environmental Quality Assessment Project.

Objectives

The objectives of the Baltimore Environmental Quality Assessment Project project were to:

- develop an occupant-driven environmental quality assessment process through which environmental quality concerns can be creatively identified, addressed and influenced by school occupants themselves.
- assess environmental quality from the perspective of the experiences of students, teachers, staff, administrators, and parent volunteers in each of five Baltimore City Public Schools that chose to participate in this project;
- understand how environmental quality may or may not contribute to the educational process in each school with respect to Student Academic Performance, Student Social Development, and Teacher Instructional Performance; and,
- understand the role of facility management in maintaining and improving environmental quality.

For Dr. Rayner Browne Elementary School #25, this report documents specific aspects of environmental quality of concern to the school. The assessment process was not conducted to judge the final worth or merit of the school as it relates to environmental quality. Rather, the intent of this project was to provide information useful for improving the environmental qualities of the school, especially those that may have some impact on the effectiveness of the educational process. It is the hope of all involved, that the results of this study be considered an affirmative step toward improving environmental quality at Rayner Browne.

Each school case study investigation followed a research process in which a selected number of teachers and administrators participated in actively clarifying the scope of the project, identifying and prioritizing environmental quality problems, issues and concerns, and formulating strategies for addressing these concerns.

The report that follows briefly summarizes the project activities and assessment process conducted within a seven month period between August, 1995 and February, 1996. Any mention of individual names are fictitious to protect the anonymity of participants in the study.

In July of 1995, Dr. Rayner Browne Elementary School agreed to participate in the Environmental Quality Assessment Project.

During the first visit on August 1, 1995, a physical inventory and preliminary walk-through of Rayner Browne was conducted, along with interviews of the principal and the head custodian.

During the second visit on September 20, 1995, a full day of observation was conducted which included behavior mapping, informal and formal interviews with teachers and photographic documentation of the school-in-use. In addition, 45-minute semi-structured interviews were conducted with three classroom teachers and one instructional specialist. Each teacher was asked to fill out a teacher survey-worksheet, as well as to administer a student survey.

Prior to a final visit on December 12, 1995, information gathered from the previous visit was tallied and organized into a series of potential environmental quality issues to be discussed during the workshop. Workshop materials included a list of all issues, floor plans showing the location of issues throughout the building, a presentation board containing photographs of problem areas. Also included were individual issue cards and a blank matrix worksheet for ranking issues by priority (high, moderate, low, none) and the potential impact, if any, on one of three educational outcomes (student performance, social development, teacher performance). The workshop, with a working group of four teachers and the assistant principal, lasted a total of 90 minutes.

In the following Spring, a teacher survey was administered to gather further information regarding teacher perceptions of environmental quality.

MAKING CONNECTIONS

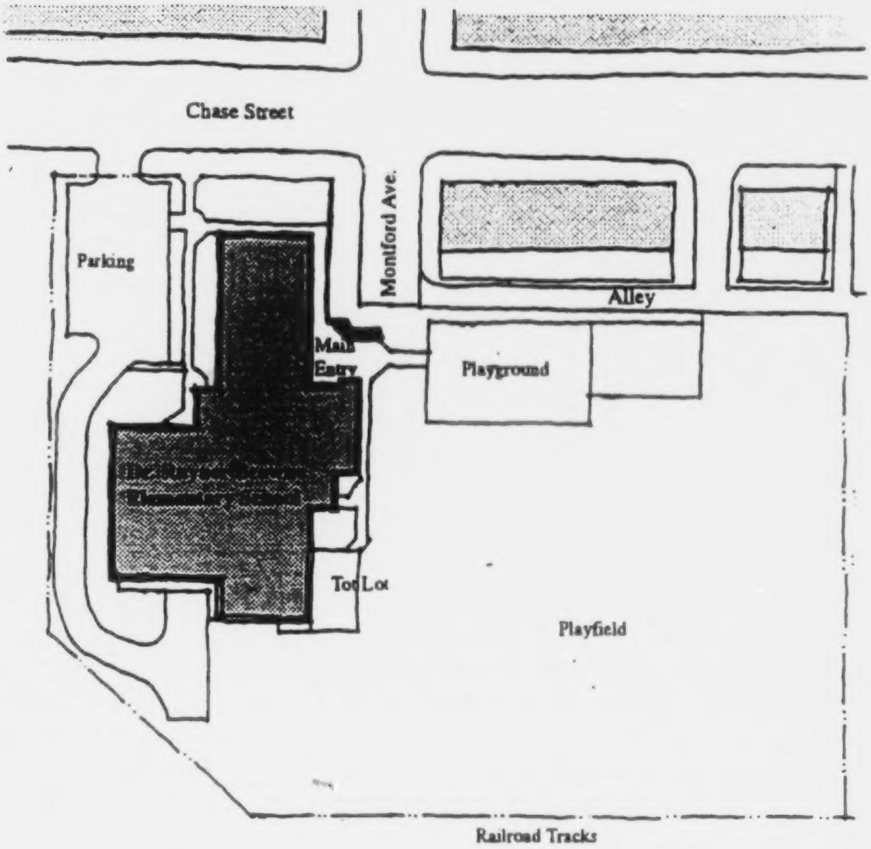
Dr. Rayner Browne Elementary School, serving Pre-kindergarten through Fifth grade in the Madison-East End Neighborhood, is a school struggling to make meaningful connections with their surrounding community, in an effort to provide a safe environment for their students. In the view of Ms. Grafton, the principal of the school for the last four years, the goals of the school are: to improve performance, increase attendance, provide a safe environment for learning, and expand parent involvement. In her opinion, all of these goals are being adversely affected by the external influences of the surrounding community. For instance, families within the community are highly mobil, resulting in the school testing students they have not taught, or not testing the students they have. In terms of parental involvement, the principal insists, "We just can't get parents to get totally involved in our program and we have worked real hard at it." Ms. Clareson, the new parent liaison, had at the beginning of the year been able to attract only nine parent volunteers with two more joining later in the year — a number not nearly as many as is needed at the school. The lack of parental involvement in turn has an affect on student attendance which has been as low as 89%, a full five percentage points below their goal of 94%. Ms. Grafton states, "We have to work hard to get them to come to school... for some of them, we have to go door to door."

"Partnership" relationships with surrounding businesses are still rather minor. For example, the school is a partner with the manager of the "Pride" grocery store just west of their school; he provides, on occasion, treats for perfect attendance. As Ms. Grafton explains, "This is a community where most of the businesses are bars, so we use them as much as we can." The bar, adjacent to the east end of their school, has provided money for graduation exercises as well as other treats for students at the school. Recently, a new partnership has been formed with John Hopkins.

Dr. Rayner Browne Elementary School, a Pre K-5 school with a projected enrollment of 328 students, is located off of Chase Street one and a half miles northeast of the Central Business District and only a few blocks away from the John Hopkins Hospital complex on Monument Street. The two story brown brick school building is bounded by a residential Chase Street, a dead end to Montford Avenue, an alley to the north, Milton Avenue and residences to the east, a grass playing field and the B&O Railroad tracks to the south, and a "Pride" grocery store to the west that is sited off of Patterson Park Avenue. Across the streeet from the very pedestrian-active Chase Street are a series of brick rowhouses, a quarter of which have been abandoned or are in a severe state of disrepair. On the corner of Chase and Montford is Freddie's Steeplechase Bar, the bar that through the efforts of the prinicipal has become one of several burgeoning "partners" with Rayner Browne.

When asked about how well she feels the school has met their goals, Ms. Grafton summarizes, "I feel good about our efforts, but I don't feel good about our accomplishments in meeting those goals."

Many of the on-going efforts of the principal, such as improving the condition of the building and grounds have been aided by the presence of their private facilities manage-



Site Plan

ment company Johnson Controls, Inc. Ms. Grafton states, "Johnson Controls has kept up the grounds much better now...these guys get out every morning and do it over and over...its a problem still but there seems to be some recognition from the community." She continues to explain that with the help of her custodial staff, the school was instrumental in cleaning up the city alley all the way to Milton Avenue.

Beginning on July 22, 1992 and ending on March 7, 1996, Dr. Rayner Browne Elementary School had been designated as a Tesseract school managed by Education Alternatives, Inc. (EAI) a private educational management firm, the lead partner in what was called the Alliance for Schools that Work· The Alliance for Schools That Work was a joint partnership between Educational Alternatives, Inc. (EAI), Johnson Controls, Inc., KPMG Peat Marwick and Computer Curriculum Corporation. EAI was the lead member of the Alliance, responsible for all instructional services; Johnson Controls was responsible for all non-instructional support functions including custodial, maintenance, grounds, security, and administrative services; KPMG Peat Marwick was responsible for managing the schools' fiscal

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operations; and Computer Curriculum Corporation was responsible for developing the computerized curriculum used by EAI.

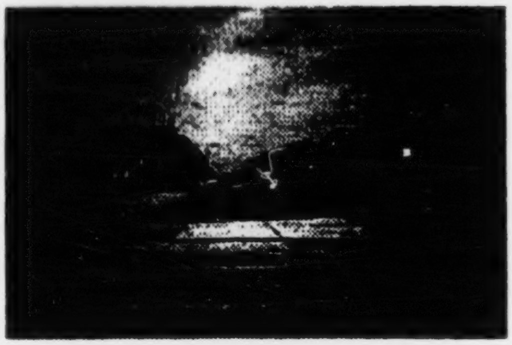
The Alliance's charge was to manage, operate and maintain nine public schools totaling 810,800 SF and serving over 4,800 students. Facility improvements included lighting retrofits, mechanical system renovations, roof replacements, window replacements, landscaping projects, intrusion and fire alarm upgrades, bathroom remodeling, and extensive painting and carpet installation. In total, the Alliance provided Rayner Browne and eight other elementary schools with new computers and software, rehabilitated the school buildings, and established the Tesseract educational program that espouses the efficacy philosophy that all children can learn.

A DAY AT THE SCHOOL

"It has to do with the entire environment...it has to do with what those children come in with...what their understanding is about the school and the outside... [and] what kind of frustrations they bring in." **[1st Grade Teacher]**

Neighborhood quality is one of the greatest concerns for the working group at Rayner Browne. Although they feel safe within their school building, venturing out on the site can be nerve-racking for teachers responsible for thirty-two students each. Several teachers described a day in late September when gun fire was heard only a block away down Montford Street. Immediately upon hearing the shots, the teachers swiftly rushed their students back into the building. Afterwards, one of the teachers realized that she had been more visably shaken and frightened than her young students. The teacher was struck with their calm behavior: she observed that the students did not appear to show as much emotion or outward fear during or after the situation. Apparently, the teacher reasoned, these children see and hear this type of violent behavior everyday and have grown accustomed to it.

Concerns over neighborhood quality were seen as being of high priority for the working group at the school. On later reflection, the teachers agreed that the experiences and problems of these students are brought directly into the classroom everyday and are expressed through a range of emotional behaviors from fighting to social withdrawal. As one teacher explained, referring to the issue of neighoborhood quality, The working group felt that students' surroundings directly affect both their social development and their capacity to focus on the everyday tasks of learning.



View of neighborhood from main entry stairs

Clearly, issues of safety and security on and around the school grounds were up front on many teachers' minds. There is an enormous amount of energy on Chase Street throughout the day and into the night, with as many as one to two dozen young adults hanging out on the sidewalk and most recently, near the school's parking lot. Just to the northwest on the corner of Patterson Park Avenue and Chase Street is a convenience store and a bar that attract still more of the neighborhood's young people. Students who wait outside play on the playground, while young adult males who do not appear to be either parents, or in anyway associated with the operations of the school hang out on the sidewalk near the school, while other young adults hang out across the street, watching passively the activity at Rayner Browne's entrance. One parent volunteer explains that open-air drug dealing is common there.

After school hours, many of the neighborhood residents occupy the school grounds, especially near the front entrance. Typically, they sit on the concrete retaining wall and smash bottles against the side of the building. The full court basketball hoops were removed a few years ago, while playground equipment has been more slowly removed, in an effort to reduce the incentive for young neighborhood residents to occupy the school grounds at night. Still, teachers routinely find broken bottles, needles and other objects on the playground and in the playyard behind the building.

View from main entrance to what remains of the basketball court and playground after all equipment has been removed

Clearly, many people in the neighborhood have not taken ownership of the school. It was not always this way though. Ms. Blake, a special education teacher at the school who has been in the school for over twenty years states, "The neighborhood was better in the past, when the school was first built. People were in here for some time and they took pride in the neighborhood... they would call the police. Many of those people have died or moved and now its not as safe or stable...it was a gradual change over the years."

The custodial staff do what they can every morning before students arrive at school to clean the grounds. It is a never ending battle, but one the custodial staff feels is well worth the effort. Referring to the custodial staff, Ms. Blake remarks, "They are in competition with crime," when it comes to keeping the school grounds safe and clean. According to the parent liaison, as a result of the efforts made by the custodial staff, some in the community have actually begun to take notice of the school's determination to maintain a positive appearance.

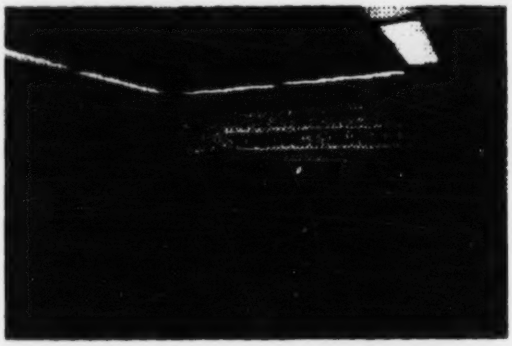
Unsatisfactory parking lighting is another issue brought up by the working group and was identified as a high priority. Due to car break-ins, a fence had been put up in the parking lot a few years ago, but teachers still experience threats to their psychological safety at night due to the lack of adequate lighting on the north side of the building leading to the parking lot. Night meetings are scheduled, but according to the principal, a few as possible are scheduled during the Winter months due to the short period of daylight after school hours.

As a first step in responding to the school's concerns over neighborhood quality, the principal, Ms. Grafton, has formed what she describes as "very minor but important" partnerships with Joe's bar located adjacent to the school and the Pride shopping center to her west. She has been aggressive in raising what has historically been dismal parental involvement in the school by hiring a new parent liasion who has strong ties to the surrounding community.

The entrance doors are bright, fresh colors of blue, green, red and orange. The lobby is heavily decorated from floor to ceiling with various signs, announcements, plants, a display/trophy case proudly announcing the school and community's performances, banners, student work, and a welcome mat on a red brick and shiny tile floor that reads "Dr. Rayner Browne Elementary #25 - Home of the Rayner Ravens - Soaring to Higher Levels of Learning."

The design of Rayner Browne's entrance lobby is appropriate considering the potential for intruders into the school from the neighborhood. Like many schools in the Baltimore City Public Schools System, the main entrance is effectively controlled by a buzzer: once an individual is let into the school, he or she must move directly into the main office before moving on to the Commons space. Although the entry sequence into the building seems severe and limiting, the actual experience is much the opposite; a visitor is struck with a positive first impression.

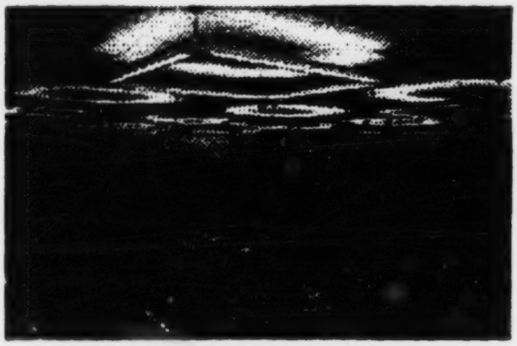
Entering the carpeted office reception room, a visitor will find the room to be extremely clean, neat and well organized with several healthy plants in the room despite the fact that there are no windows. The secretary, Ms. Sherry, is stationed at the desk located immediately next to the door of the lobby. She is an integral player in the management of the school, acting not only as the receptionist, but as a security guard, guide, concierge, and most importantly, a baby-sitter. As Ms. Sherry explains, a major problem with parents is that they do not always pick



View of entry doors from Main lobby into Commons up their children on time, and sometimes forget altogether. She goes on to say, "Some of the kids will be here until four or five at night — their parents never come!" From the office reception room can be seen the Commons, a space that can only be described as the hub of the school.

Not only does the Commons act as the all too familiar "multi-purpose room" (a cafeteria, an auditorium, a morning meeting space, a large group instructional area and a staff meeting room), due to its proximity to all other places in the school it serves as a social center unifying the entire school. All stairwells, entrances, and instructional areas lead to the Commons. On the first floor for instance, Instructional Pod "A" (containing four instructional areas; First Grade as well as Grades 2, 3 and Special Education) is north of the Commons, the Gymnasium and associated functional spaces located to the west, while the Kindergarten classrooms and Parent Academy are located to the south, and the administrative wing along with the main entrance are located to the east. Both stairs leading to the second floor can be reached as well from the Commons (See floor plan illustrations).

At 8:12 AM a teacher addresses the crowd of students over the microphone mounted on a podium along the wall of the Commons to greet them but also to quiet them down and prepare them for the procedure of lining up by class behind their respective teachers. There appears to be plenty of room for this procedure and in only four minutes, the student body divides up and goes to either the gym or the commons for the Morning Meeting.


The Commons during morning breakfast

The Morning Meeting is a structured activity all Tesseract schools go through in which the school collectively begins the day discussing particular topics related to social skills and development.

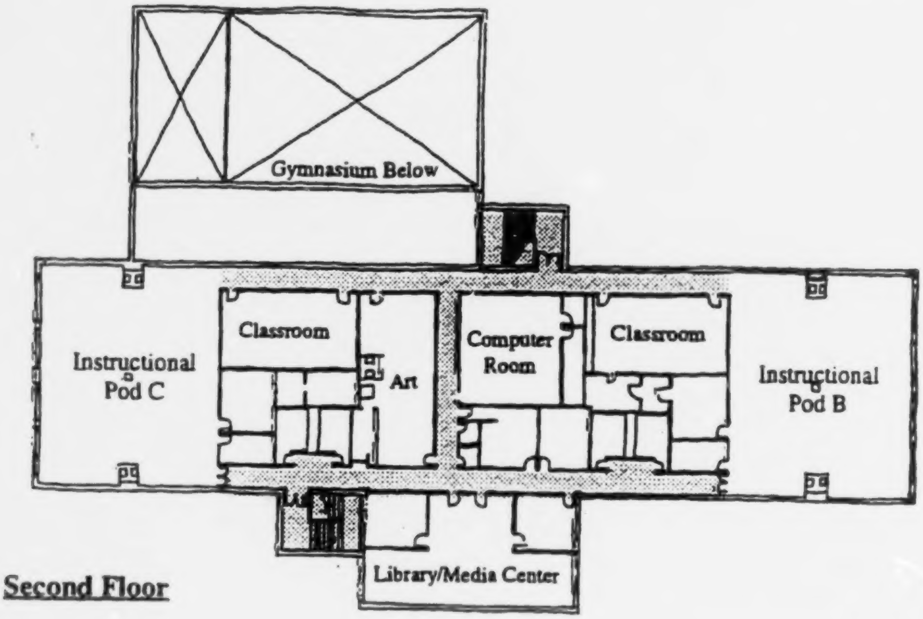
As some students file into the gymnasium, they see banners on the walls depicting different emotions like 'happy,' 'sad,' 'love,' 'anger,' etc. A teacher, on this particular day, Ms. Harriman, leads eight students to the front, while eight classes are quietly seated on the floor. Teachers line the walls of the gymnasium. The eight students up front have been chosen today to lead the rest of the assembled student body in the Pledge of Allegiance, after which the Assistant Principal talks about pedestrian safety while the students help a discussion about feelings led by Ms. Harriman in which each student says an emotion and what that emotion is like — love, anger, frustration, proud, sorry, lonely, happy, afraid. Finally, one student reads aloud a book about sharing and the morning meeting then comes to a close. The whole event sets the mood for the day and students, along with their teachers, walk to their respective instructional areas.

The Tesseract educational program, of which the Morning Meeting is just one component, is the result of the review and organization of several years of research on the components of elementary education that have been found to work: (a) a Personal Education Plan (PEP) for each student to set goals for learning to be signed off by parents; (b) staff development meetings held once a week on a variety of topics such as learning modalities and computer training; (c) instructional interns or aides with college degrees (but not necessarily with educational training) to increase the number of adults in the classroom; (d) Tesseract tests to complement standardized tests; (e) new instructional technology — four computers in every classroom and a central computer room using software developed by one of the Alliance partners; (f) learning activity areas and movable furniture; and, (g) increasing parental involvement through the institution of Personal Education Plans, encouraging parental participation in the classroom or on field trips, in PTAs or attendance at school functions. Other innovations brought in by EAI were telephones in classrooms so teachers could contact students' families, increased supplies in the classroom, use of whole language and whole math, the use of a Learning Style Assessment, and customized instruction.

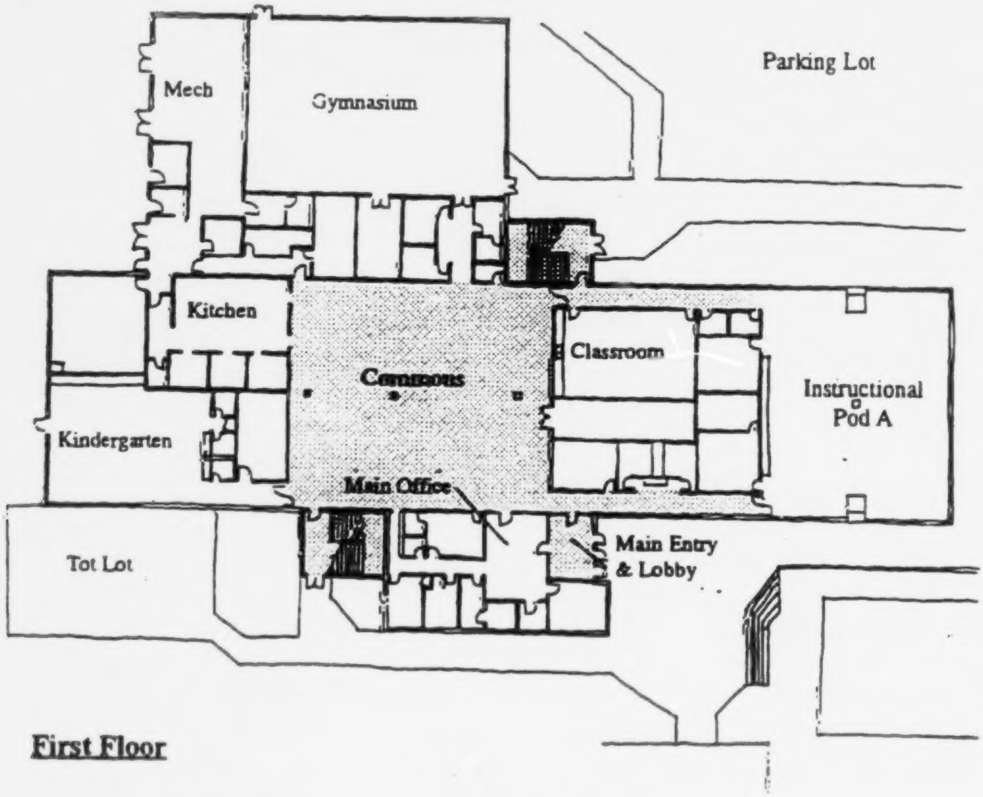
Morning Meeting in the Gymnasium

The Tesseract educational program could not find a more sympathetic physical layout in Rayner Browne. Well-defined open space instructional areas with room for activity areas offer the flexibility required to physically implement the program. There are in effect, three main open space instructional areas each containing four classes, with one on the first floor and two on the second floor. On the second floor, the open space instructional areas are effectively separated by a core of self-contained classrooms, a computer room, a media center, two sets of boys and girls toilets and other supplemental instructional areas. The design layout of each instructional "pod" area into four distinct areas is architecturally and structurally defined by a column in the center of the room. Although the original intent of the 2,600 square foot open space design was to foster free movement throughout the entire pod, the division of the pod into four distinct 650 square foot classroom areas has been effective.

The instructional pods are, for the most part, clean and organized with colorful displays that are bright and inspirational. Instructional Area A located on the north end of the first floor provides areas for students to sit on the carpet so they may listen to their teacher read to them. The southwest quad has a popular library "nook" which acts as a small gathering place complete with comfortable chairs, stuffed animals, and colorful games and displays all designed to encourage reading. The quads in this Pod, as in the other two pods, are defined by various pieces of furniture such as four and a half foot high rolling carts with


Gymnasium Below
Classroom
Computer Room
Classroom
Instructional Pod C
Art
Instructional Pod B
Library/Media Center

Second Floor

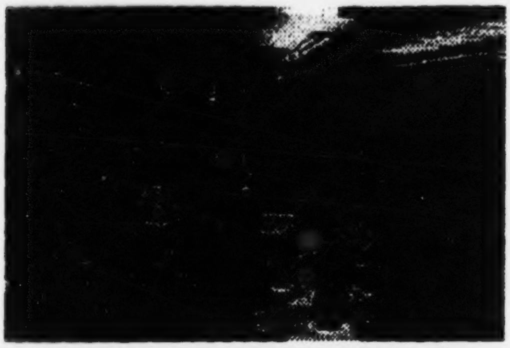

Mech
Gymnasium
Parking Lot
Kitchen
Classroom
Commons
Instructional Pod A
Kindergarten
Main Office
Main Entry & Lobby
Tot Lot

First Floor

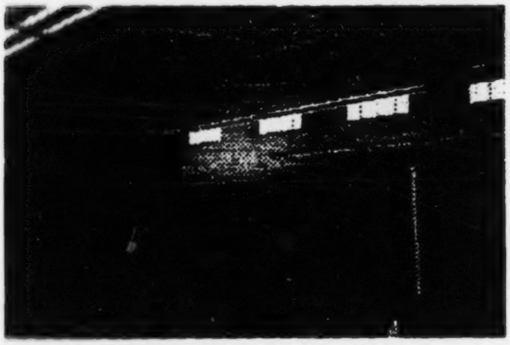
coat hooks on one side, a blank wall surface on the other, as well as similar height bookshelves. Often various objects such as globes, large open books and stuffed animals are placed on top of the bookshelves, not as storage, but as a means of effectively increasing the height of the divider between class areas. Running from east to west is a linear table with four computers, provided by EAI, that effectively doubles as a divider; an efficient use of space important in the open pian arrangement. Built in sink counters located at the center of the Pod provide an ample barrier between chalkboards, and further define the open space.

The physical elements within the pods effectively support what could only be described as an optimal cooperative learning setting. In one particular instructional area, eight students are seated at two tables facing the chalkboard learning from the teacher, four studetns busily working on the computers, five students receiving small group instruction from the teaching assistant, and three students working alone at individual desks. The size of the class, twenty, made this possible, as well as the flexibility and variety of settings offered within this one instructional area.

Although the adaptable layout of instructional areas was not seen as a problem in Rayner Browne, the conflux of problems surrounding lighting and outdoor views were. On the second floor, the ceilings of the instructional areas are pitched to allow for clerestory daylighting although it is rather high and diffuse and does not completely reach work surfaces. The first floor does not have this luxury, instead relying almost solely on fluorescent lighting from a standard two by four acoustical tile ceiling. Windows on the first floor do not provide much daylight since the frames contain frosted Plexiglas that lets little light in. In addition, the windows are locked for security purposes, and teachers draw the shades to prevent possible intruders from taking an inventory of the classroom before stealing. Teachers claim to have found people in the past suspiciously looking into classroom windows on the first floor during the day. For the working group, this issue of lighting was found to be of moderate priority and one worthy of some further discussion.



Student working groups in Instructional Pod A. Note on the left fully drawn window blinds as a reaction to the threat of intruders.



Clerestory lighting allows some natural daylighting to enter the instructional pod areas, but rarely reaches the work surface.

"They are already crowded at home and they come here; they want to spread out. They come here to get away from it...I have seen some of the places where they live, and I can understand." [Parent Volunteer]

Neither class size nor the density of instructional space use was felt to be of concern to the working group. In fact, Rayner Browne has ideal class sizes.

Currently, there are no standards for the size of academic learning areas which vary from state to state. However, there is nationally, one organization that has begun to rethink the sizes of educational spaces. In their Guide for School Facility Appraisal, the Council for Educational Facility Planners International (CEFPI) state, "New forms of instruction require greater amounts of space than in the past. Special education, remedial classes, cooperative learning, and community participation all create spatial requirements that differ from earlier periods of education."

CEFPI recommends the following: The "building capacity" of an elementary school (the number of students capable of occupying a school facility) can be measured by taking the total gross square feet of the facility and dividing by 90 GSF/student (90 GSF being a CEFPI recommended number). The recommended gross square footage per student for kindergarten and pre-kindergarten classes are: minimal 30-35 GSF/student, acceptable 36-40 GSF/student, ideal 40-48 GSF/student. The recommended gross square footage per student for elementary classes: minimal 23-27 GSF/student, acceptable 28-30 GSF/student, ideal 31-36 GSF/student.

Taking these standards as a means of assessing the conditions at Rayner Browne, the school building is below its capacity of 399 students at 348 students (at the time of the assessment). Pre-kindergarten and Kindergarten classrooms are 'acceptable' at 38 gross square feet per student. While, first through Fifth Grade classrooms are 'minimal' at 27 gross square feet per student.

Even with the advantages of small class sizes at Rayner Browne, density can be a problem for some students.

Although there was heated debate about the relative merits of open space versus self-contained classroom instruction in Rayner Browne, the working group chose to prioritize this issue as moderate. Teachers feel on the whole that in open plan instructional areas it is hard to manage student behavior due to noise and distractions from other classes, often with more time being devoted to discipline and classroom management than teaching and learning. Problems include classes walking past others and causing distractions and classes "talking over" others, escalating the noise problem. Noise in the pods was seen as a separate issue and one that also was of moderate priority. The group recognized that these problems could be overcome by effective classroom management techniques by the individual teacher, and that some teachers have yet to fully realize this. Ms. Blake summed up her feelings about open space saying, "It took time to get use to it...we tone down our voices now, we can tell who is not use to open space because they are are loud and distracting...me, I'm adaptable."

Some teachers in the group felt that storage capacity in cabinets under sinks and against the core walls, which were incidently away from their instructional areas, were not enough for the needs of the entire pod. In addition, these same teachers felt that shared storage space is unorganized and overpacked with various materials and books that have not been used in years. The working group agreed that this problem was, however, a low priority that could be resolved by carefully organizing shared storage rooms.

Students may be fairly cooperative in toning down their voices during instruction in their pods, but their behavior during the lunch period is another story. During lunch, the commons room becomes a highly energetic cafeteria that proves to be a true communal gathering place. Several members of the community are involved in managing the lunch period: some students listen to an elderly man from the neighborhood, four mothers help discipline students, the custodian is on hand for any unexpected incidents. After the madness of lunch subsides, the elderly man, the four mothers, two teachers and two custodians converse about the day's events.

"The air conditioning is broken all the time...there is no happy median, either its to hot or too cold." [Special Education Teacher]

Next to issues of neighorhood quality and safety, poor air quality was a constant concern for teachers. Problems with dry air, poor air flow and ventilation associated with the air conditioning system are experienced by many teachers in the school. Ms. Parrimore, a participant in the working group stated, "I'd rather it be a bit cold, then I can always control by what I wear." Some teachers believe strongly that air borne bacteria, or "germs dancing around in the room," is a prime reason for the spread of infections to students and teachers alike. Some teachers have complained in the past of irritated, red and ichy eyes and aggrevated allergies. Unfortunately, air problems are most likely the result of a confluence of other problems. Even with the constant replacement of pumps, filters and heating and cooling coils, the aging mechanical system continues to create problems for occupants no matter how vigilant the facility management team is. Locked windows, in part a response to both operating the air conditioning system and to safety and security issues, eliminates the opportunity for occupants to control their environment at the source.

Ironically, despite the problems associated with the air conditioning system, the working group was unanimous about the contribution the Johnson Controls facility management employees have made in the school. One of the reasons for this may be the responsiveness of the custodial as well as maintenance repair staff to teacher concerns. A previous custodial team leader, Roger Spearing, developed a customer response form for teachers that has facilitated this positive response. He would place copies of the form in each teacher's box to encourage their feedback on problems that they might have related to the physical environment. The types of problems and concerns that Mr. Spearing and his team have come across include the need for heat and other air quality concerns, keeping bathrooms supplied, setting clocks, repairing running sinks, coaxing Ms. Johnson's uncooperative audio-visual screen, repairing a damaged outlet in Ms. Bennick's room, adjusting legs on a classroom table, replacing duct tape used to conceal computer network wires running along the floor of the computer room that children keep tripping over, fixing a door outside the boys bathroom that is stuck, replacing flickering fluorescent lights in Ms. Henderson's classroom, reserving the VCR for Mr. Jennings, installing a pencil sharpener in Ms. Leadbetters classroom, repairing a broken top drawer of Ms. Hopper's desk, fixing a damaged puzzle rack in Ms. Anger's room, replacing the intercom speaker switch, and repairing a rug at the entrance of Ms. Blackmore's room. Mr. Spearing's contribution to building and maintaining the educational "stage" speaks for itself. One teacher who used Mr. Spearing's customer response form exclaimed, "I am happy to have you as my personal custodian."

As a further measure of the performance of the custodial team, Mr. Spearing developed an evaluation form that began by stating, "In our on-going commitment to improve the quality of our service, we are asking for your suggestions to tell us how we can better respond to your needs and concerns. Our objectives are to improve the manner and ease with which you can communicate your problems, increase the speed of our response, and ensure that each custodial employee you interact with is attentive, professional, and courteous". The principal writing Mr. Spearing stated, "I am very satisfied with the keen eye and sense of duty exhibited by the team leader. He sees a problem and readily takes care of it." One teacher remarked, "My room almost always looks spiffy!!" Another stated, "They are an asset to the school." Some concerns surfaced that have helped the custodial team improve their service. One teacher observesd, "Sometimes [you meet my needs in a timely manner], but it is not always in your control; a problem may have to wait for help or response from your main office (Johnson Controls)". This same teacher conitnued to suggest, "Just letting me know that they (Johnson Controls) are working on the problem or request is very helpful."

FINDINGS & DISCUSSION

The previous section described in some detail the more critical of the twelve (12) distinct environmental quality issues of concern at Dr. Rayner Browne Elementary School identified by the working group (See Appendix B for a complete listing and summary of all environmental concerns discussed here).

Some of these issues overlap and in some cases, contradict each other. For instance, the desire for natural daylighting, fresh air and outdoor views were often overruled by more critical needs for security from potential intruders, which dictated the locking of first floor windows. To further understand the implications of these issues on the educational process, through the assistance of the working group, issues were categorized by (a) ten attributes of environmental quality, and (b) their potential influence on three broadly defined educational process outcomes: student performance, student social development and teacher instructional performance.

Ten distinguishable attributes of environmental quality have emerged from the intersection of the researchers' findings in Baltimore City Public Schools and what is known from previous research literature. Not only was there a desire to understand the nature of the interaction between the various attributes of environmental quality, but the appraisal of teacher perceptions of the potential influence on the educational process was desired as well. What follows is an analysis of the relationship between these attributes of environmental quality, the issues raised in the working group and their percieved potential impact on the three educational process outcomes.

1. Physical Comfort and Health *refers to the degree to which occupants feel the indoor environment meets your physiological needs with respect to thermal and air quality, illumination, noise and odors.*

- The environmental quality of physical comfort and health was one of the most often discussed qualities of concern for the working group, identified as potentially influencing student performance, social development and teacher performance as evidenced by the discussion of the issue of Poor Air Quality (#2). Poor air flow circulation and ventilation were the main causes of concern for teachers. These conditions may contribute to air borne bacteria, thereby causing many health related problems which may in turn have the potential of influencing performance.

- Problems with Noise in Pods (#6), and Lighting in Pods (#7) were identified by the working group as moderate priorities that could have some additional influence on student and teacher performance.

2. Classroom Adaptability *refers to the degree to which occupants feel that the physical classroom space can be adapted to different and desired educational activities and functions.*

- The findings in Building Functionality which referred to Open Plan versus Self-Contained (#8) are no different in Classroom Adaptability. At no time did the working group distinguish this issue from building functionality, an adaptability attribute at the scale of the school as a whole.

- Additional Storage Space Options (#9) in open space instructional areas was identified as a low priority and one that did not directly affect any educational outcomes.

3. Safety & Security *refers to the degree to which occupants feel the school building contributes to protecting occupants from harm, injury, or undue risk.*

- Safety and Security was one of four attributes of environmental quality mentioned the most at Rayner Browne. Three environmental quality issues, namely, Neighborhood Quality (#4), Poor Outdoor Lighting (#1), and Playground Safety (#3) illustrated the school's high priority concern with safety and security issues on the school grounds.

- For the most part, safety and security were not seen as affecting educational outcomes, except for the broader issue of neighborhood quality (#4) which was perceived as clearly influencing the attitudes and attention of students entering the school.

- The attribute of safety and security represented by the issue of poor neighborhood quality was observed by teachers to potentially affect student performance as illustrated by their students' preoccupation with problems at home which takes time away from focused school work.

- Student social development was also perceived by teachers to be affected by poor neighborhood quality as illustrated by in-school fighting; the result of social behavior learned at home or in the community subsequently brought into the school.

4. Building Functionality *refers to the degree to which occupants feel the various places within the school building are functionally compatible with the school's educational programs and activities.*

- Building functionality mirrored the problems of Open Plan versus Self-Contained (#8) with another attribute of environmental quality, that of classroom adaptability. This issue is a moderate priority for the working group.

- Building functionality was seen by teachers as directly influencing both student and teacher performance in Rayner Browne's three open instructional space pods. Visual distractions and noise were the contributing factors most often mentioned in open space problems.

- Although teachers explicitly identified these instructional spaces as a negative influence on their ability to teach their students, many aspects of these pods appeared to postively support the instructional program delivered in those spaces: pods provide well-defined fixed and semi-fixed boundaries between instructional areas and possibilities for various activity nooks and learning areas.

- Another environmental quality issue was categorized as a building functionality issue, ADA accessibility (#10) (ADA: Americans with Disability Act). The working group reasoned that although they did not have any physically disabled students, if they were to have one, accessibility issues might affect that student's ability to use the entire facility, thus affecting that student's performance and social development. In a similar way, they could see theoretically how this issue could affect a physically handicapped teacher's performance as well. The school does not have an elevator, and bathrooms, not unlike most older Baltimore City schools, are currently handicapped inaccessible. This particular issue was deemed a low priority by the working group simply due to the fact that they do not have and historically have not had any physically disabled students use their school, though they recognized the need to provide for that eventuality at some point in time.

5. Aesthetics & Appearance *refers to the degree to which occupants feel the school building is attractive and provoking.*

- Playground Safety (#3) was the only environmental quality concern brought up in which aesthetics and appearance was at issue. As mentioned earlier, playground safety was not seen as influencing any educational outcomes, but it was deemed of high priority to the working group nonetheless.

- Within the interior of the school, Rayner Browne did not have any problems associated with aesthetics and appearance. One of the main reasons for this was that the appearance of the school (i.e., cleanliness, orderliness and character) was seen as a positive quality, influencing all educational outcomes. As data from interviews indicate, many working group teachers felt that the quality of aesthetics and appearance were one of the top three attributes of importance with respect to educational outcomes. As one teacher states, "An appealing school makes [the] school inviting and a place you want to be," while another teacher adds, "The aesthetics and appearance of a school gives students, parents and outsiders a welcoming atmosphere."

6. Personalization and Ownership *refers to the degree to which occupants feel the school building offers opportunities to create a personal and self-expressive environment and engender a sense of ownership.*

- For many of the same reasons mentioned previously concerning Neighborhood Quality (#4), the environmental quality of personalization and ownership was identified by the working group as related to student performance, social development and teacher performance.

- Evidence of the lack of neighborhood ownership of the school grounds (e.g., high priority issues such as Playground Safety #3, Neighborhood Quality #4) confronts students and teachers alike everyday: garbage, broken bottles, graffitti and other paraphenalia strewn across the school site work against feelings of ownership. Within the school however, teachers and students are capable of personalizing their space and have gained a strong sense of ownership in their school.

- Personalization and ownership qualities of the school are most evident with respect to the moderate priority issue Open Plan versus Self-Contained (#8). Teachers often personalize their instructional areas even though at first glance each area appears to have common features similar to others in the pod. However, as one teacher states, "Our classroom is not just our classroom...we try to make it the students' classroom, with lots of colors..." Within guidelines established by teachers, there is evidence students have opportunities to personalize as well as take ownership in their instructional area.

7. Social Places (Places for Social Interaction) *refers to the degree to which occupants feel that places within the school building provide opportunities for meaningful social exchange and interaction.*

- One key functional feature of Rayner Browne was the centralized location of the Commons, ultimately providing a true community forum. The visitor is drawn into the space directly off the main entrance. The Commons serves as a cafeteria, student meeting area, staff meeting space, community commons, informal social encounter space, as well as a collector of all horizontal and vertical circulation in the entire building. Although not mentioned by the working group, the Commons clearly contributes to the social development of students throughout the day.

- Although the issue of Playground Safety (#3) was not identified during the workgroup, as influencing any educational outcomes, several teachers within the group had previously mentioned the value of the playground in promoting social development. Part of this discrepancy is due to the high prioritizing of the Playground Safety issue, thereby overshadowing or excluding other, more positive characteristics of the playground.

8. Privacy *refers to the degree to which occupants feel that there are places within the school building which provide opportunities for an individual or a small group to be free from the intrusion of others.*

- Based on discussions concerning the moderate priority issue of Open Plan versus Self-Contained (#8), the environmental quality of privacy was seen as affecting student performance. Some classroom areas within the school provide places such as corners or activity areas, others do not. Several teachers indicated that students are allowed to go anyplace within the classroom, but often only a few choose this option.

- Again, based on similar discussions concerning the issue of Open Plan versus Self-Contained (#8), the environmental quality of privacy was also seen as affecting teacher performance. Teachers do not get privacy in the open plan space, especially from other teachers and classes although opportunities exist: the teachers lounge, where seven or eight teachers might eat lunch together, or their own classrooms during times when students are at lunch.

9. Sensory Stimulation *refers to the degree to which occupants feel the school building provides a stimulating environment for learning that is safe yet challenging.*

- Like other schools in this study, Rayner Browne felt they had succeeded in providing the appropriate level of sensory stimulation for their students.
- The only issue that arose concerning appropriate sensory stimulation was that of the condition of the existing playground (Playground Safety #3) which was not seen as affecting any educational outcomes.
- The short corridors leading to each Pod were for a time during the Fall lacking in student work. This concern raised by the reseacher was countered by the working group as a temporary condition all schools go through in the first few months of their operation: it takes time for students to generate work and fill the walls with the outcomes of their projects. As time progressed, the school did become more stimulating and the researcher experienced new visual presentations on each visit.

10. Crowding/Spaciousness *refers to the degree to which occupants feel the school building cannot adequately accommodate the number of students and teaching staff occupying it.*

- No issues relating to the environmental quality attribute of crowding/ spaciousness to educational outcomes were discussed by the working group. Rayner Browne did not have a problem with crowding. Students have ample room to move around within instructional areas in order to gain privacy or to work in small groups. In fact instructional areas were observed in several classrooms as providing an optimal setting for cooperative learning behaviors.

CASE STUDY REPORT:

Coldstream Park Elementary School #31

PROJECT OVERVIEW

This report documents specific environmental quality concerns of one of five elementary schools in the Baltimore City Pubic Schools. This report serves not only as a record of the environmental quality concerns themselves, but also describes the assessment process within which these concerns have arisen.

This section provides an summary of the project objectives, problem and approach, and process and procedures of the Baltimore Environmental Quality Assessment Project.

Objectives

The objectives of the Baltimore Environmental Quality Assessment Project project were to:

- develop an occupant-driven environmental quality assessment process through which environmental quality concerns can be creatively identified, addressed and influenced by school occupants themselves.
- assess environmental quality from the perspective of the experiences of students, teachers, staff, administrators, and parent volunteers in each of five Baltimore City Public Schools that chose to participate in this project;
- understand how environmental quality may or may not contribute to the educational process in each school with respect to Student Academic Performance, Student Social Development, and Teacher Instructional Performance; and,
- understand the role of facility management in maintaining and improving environmental quality.

For Coldstream Park Elementary School #31, this report documents specific aspects of environmental quality of concern to the school. The assessment process was not conducted to judge the final worth or merit of the school as it relates to environmental quality. Rather, the intent of this project was to provide information useful for improving the environmental qualities of the school, especially those that may have some impact on the effectiveness of the educational process. It is the hope of all involved, that the results of this study be considered an affirmative step toward improving environmental quality at Coldstream Park.

Each school case study investigation followed a research process in which a selected number of teachers and administrators participated in actively clarifying the scope of the project, identifying and prioritizing environmental quality problems, issues and concerns, and formulating strategies for addressing these concerns.

The report that follows briefly summarizes the project activities and assessment process conducted within a seven month period between August, 1995 and February, 1996. Any mention of individual names are fictitious to protect the anonymity of participants in the study.

In August of 1995, Coldstream Park Elementary agreed to participate in the Environmental Quality Assessment Project.

During a visit on September 22, 1995, a physical inventory and preliminary walk-through of Coldstream Park was conducted, along with interviews of the principal and the head custodian.

During a visit on October 26, 1995, a full day of observation was conducted which included behavior mapping, informal and formal interviews with teachers and photographic documentation of the school-in-use. In addition, 45-minute semi-structured interviews were conducted with three classroom teachers and one instructional specialist. Each teacher was asked to fill out a teacher survey-worksheet, as well as to administer a student survey.

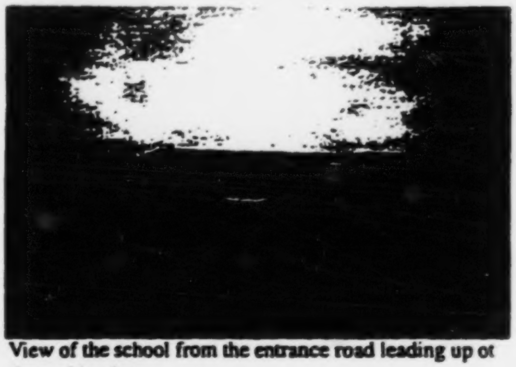
Prior to the final visit on December 14, 1995, information gathered from the previous visit was tallied and organized into a series of potential environmental quality issues to be discussed during the workshop. Workshop materials included a list of all issues, floor plans showing the location of issues throughout the building, a presentation board containing photographs of problem areas. Also included were individual issue cards and a blank matrix worksheet for ranking issues by priority (high, moderate, low, none) and the potential impact, if any, on one of three educational outcomes (student performance, social development, teacher performance). The workshop, with a working group of four teachers and the assistant principal, lasted a total of 90 minutes.

The following Spring, a teacher survey was administered to gather further information regarding teacher perceptions of environmental quality.

A CAPABLE SCHOOL

"Capable" Coldstream Park Elementary School, constructed and occupied in 1979 serves parts of the Coldstream, Homestead and Montedello neighborhoods, northeast of the downtown business district by two miles, located just east of Greenmount Avenue (Route 45) on the corner of Exeter Hall Street and Loch Raven Road. The school is sited on the top of a hill it shares with an athletic stadium used by the popular "Baltimore Stallions," a semi-pro football team. Just north of the school is a fenced-in storage facility owned by the City of Baltimore.

Coldstream Park got its prefaced name "Capable" after the arrival of its new prinicipal Ms. Windsor, who has a reputation of poetically embellishing the names of the schools she has managed by adding an adjective to describe the character or personality of the school. Several names were voted on and "Capable" was the winner. Although Ms. Windsor has of this year retired from educational service, her assistant prinicipal Ms. Souter has been more than capable in providing continuity in a transition period for the school. The name has remained, becoming part of the historical fabric of the school.



View of the school from the entrance road leading up ot the parking lot.

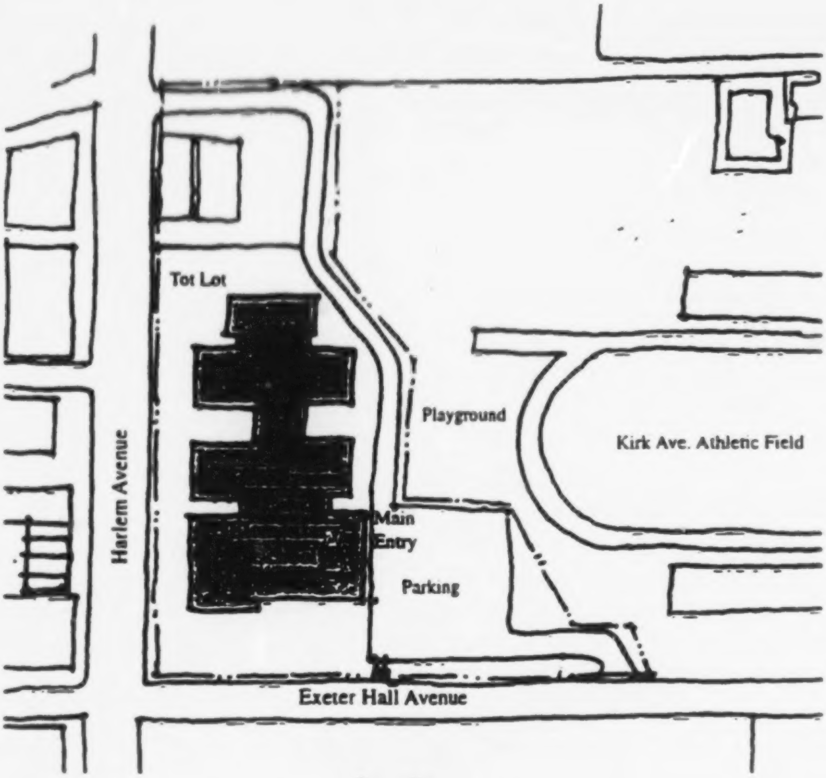
Although the school has had its problems with parental involvement, student achievement and student attendance, there are signs that some of these problems might be averted. Coldstream Park, like many schools in the Baltimore City Public Schools, has adopted a site-based management structure and employs a school improvement team that "allows key stakeholders the opportunity to collaborate on the mission, philosophy, goals, and strategies for improved management, teaching, and learning at the school" (Excerpt from school handbook).

One of the SIT's responsibilities is to develop a school improvement action plan. The most recent action plan calls for increasing parental involvement through a series of Parent Community Appreciation Events and instituting an adult basic education program among other activities. Parental involvement that has never been very high at Coldstream Park is now getting better. According to Ms. Windsor, "We have a new parent liaison who has been successful...we just had a successful Back to School Night social...and at the last PTA meeting the auditorium was filled!"

Attendance has also been historically low, but the school is hopeful this will change this year. One particular event held in the school's auditorium in October, "Attendance Blast Off!" had an intended goal of promoting excellent attendance in every student. Thus far, it has not met expected goals even though a communications company in the area participated in the event, promising to sponsor a Halloween party for students with perfect attendance.

Organizationally, Coldstream Park is a Pre-K through Grade 5 structure with a current enrollment of 577 that has risen from 529 in the beginning of the year. Class sizes range anywhere from 17 in Kindergarten to as many as 37 in a two Third Grade classes. The school consists of 20 instructional teaching staff, 11 resource staff (with an additional 5 positions presently vacant), four administrative and clerical staff, two cafeteria staff and two custodial staff members. Coldstream Park has also been able to obtain a Parent Liaison who currently works with 7 parent volunteer aids.

The school practices cooperative learning and has implemented the strategies advocated in the Dimensions of Learning philosophy. Other instructional program offerings include Compensatory Education, Title I, Special Education, Writing to Read Lab and the STARS Science Program. The school consists of entirely self-contained classrooms some of which have the capacity to accommodate two classes. In essence, many classrooms have the ability to be opened up into a larger instructional space for team teaching, although according to the principal, this strategy is rarely practiced.



Site Plan

A DAY AT THE SCHOOL

At about 8:00 AM considerable activity begins in front of the school as busses, cars and parents fill the drop off lane in front of the school. The one-way traffic pattern of the site seems to cause a traffic jam and coincidentally, a potentially dangerous atmosphere for students.

The school site, although in the center of several residential neighborhoods, is isolated on a hill, providing for many teachers a sense of security from the perceived dangers of the neighborhood: open-air drug dealing and crime. However, the school is not completely immune from these problems. Parking lot safety is a continuing concern for teachers. Staff cars are regularly broken into. Although there is a security camera, it has not been functioning, and there is an absence of lighting on both sides of the building out to the parking lot.

However, with these problems in mind, one teacher, Ms. Franklin still explores the neighborhood with her class, stating, "It's safe enough to take my students on walks through the neighborhood to visit the post office, or the cable company, or Mc Donald's...I still feel safe."

Students standing patiently in line for their teachers to receive them, go directly into their "wings" of the school. They either enter through the main doors, or go through one of the four other entrances along the east wall of the school. This proves to be a very effective means of bringing in over five hundred students at one time. During the morning arrivals, the principal stands outside the office greeting students, parents and visitors alike.

School begins at 8:30 AM where opening exercises and classroom routines are completed. Today, the Pledge of Allegiance, the Student Pledge and the School Song "Lift Every Voice" are performed by Ms. Terry's class. They all stand around the microphone in the main office and go through the ritual without a hitch; they know all the songs by heart. One responsible young 4th Grade girl mans the phones while other administrators are occupied with the morning events.

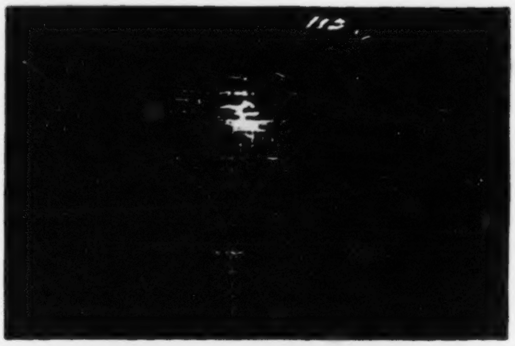
One of the most inviting aspects of Capable Coldstream is the experience of walking into the main lobby. The architectural design of the lobby in combination with the school's decorative welcoming signage and displays creates a successful communal place for visitors and occupants alike.

In the center of the lobby is a banner sign welcoming everyone to Capable Coldstream Park. The walls and ceilings are full of colorful and inspiring seasonal decorations of

The School Song "Lift Every Voice" are performed by Ms. Terry's class in the Main Office over the school address system

pumpkins and Fall leaves (Halloween is only a few days away), and displays including a series of student work entitled "A Place Called Home," a banner that states "Let's all PITCH IN to make our school a better place," and a wall display that insists, "It takes a whole village to raise a child, Join Us at "Capable" Coldstream Park." Off the 20 foot wide main lobby to the left is the cafeteria/ auditorium. Due to continuous use, the divider partition between the cafeteria and the auditorium is in functional disrepair and in need of replacement. The doors to each space are always wide open, providing a strong feeling of openness and connection between all of these spaces. To the right is the main office with full height vision glass allowing for clean visibility .

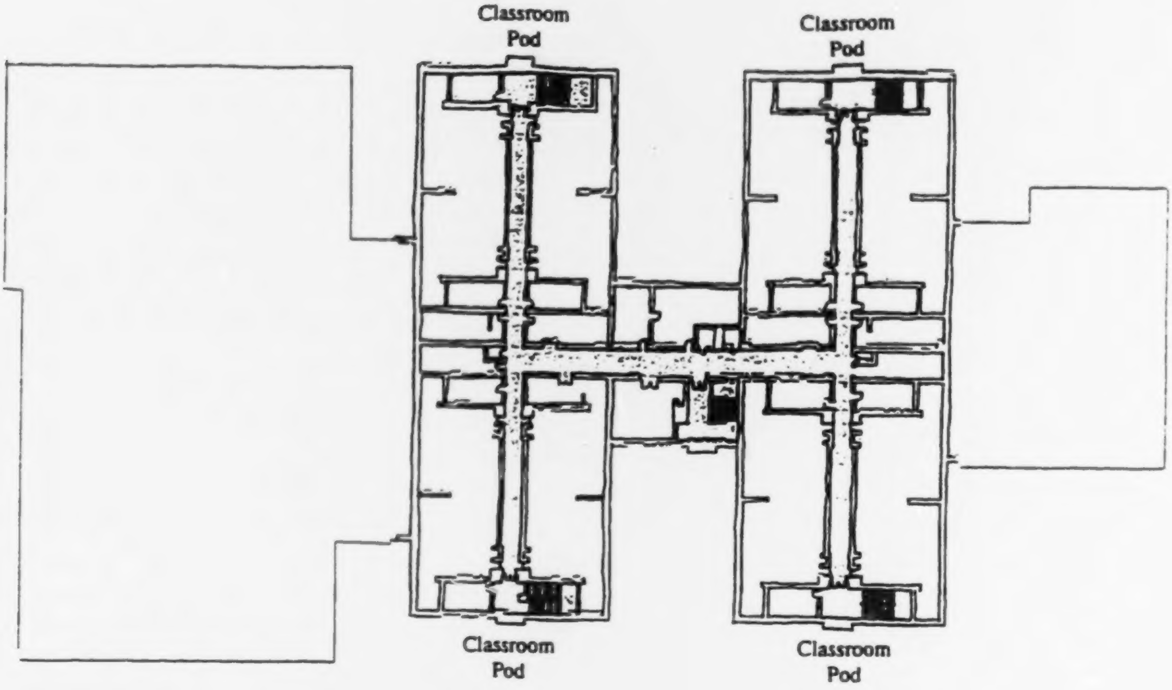
Getting from the lobby to the various classes can be difficult for parents and visitors. When attempting to explain how they find their way around the school, one teacher, speaking for the working group explained, "This is a complicated building to first find your way around...each hall is very, very similar at first, we think of a Big "H", then its OK."



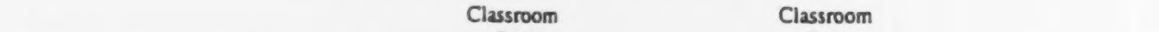
Main lobby decorations and displays

On the first floor, attached to the south of this two story "H" building are all the larger assembly spaces for the school: the main entrance lobby, the cafeteria and kitchen, the auditorium and the gymnasium. At the north end of the long central corridor, attached to this core "H" building resides the kindergarten wing which contains three self-contained kindergarten classrooms with their own entrance and lobby. The two story "H" classroom building itself accommodates all the instructional spaces from Grades Pre-K through 5th. The first floor houses the administrative offices and computer room, and four self-contained classrooms, all special education classes. Music, art and the library share another wing, while the opposite wing contains two modified open instructional areas, or pods, that are occupied by four 1st grade classes. To help with wayfinding, directional signage is provided at the juncture of the pod corridors directly off the main corridor. Signage is accurate, but tends to blend into the walls. To soften the long main corridor, philodendron plants are hung from the 2 x 4 acoustical ceiling tile system, and managed by a student Plant Brigade. The entire first floor covers 60,000 square feet, with 22,000 square feet of instructional space.

The second floor of the "H" contains four wings, each with two similar modified open instructional areas (of 1,800 square feet each) occupied by either one or two classes. Wings contain two 4th Grade classes, two 3rd Grade classes, two 4/5th Grade combination classes and a 5th Grade class, and finally, three 2nd Grade classes and one special education class. In at least five cases on the second floor, single classes are occupying instructional space originally intended for two classes. Finally, the center of the "H" contains various supplemental instructional areas, storage, restrooms and a main stair. The entire second floor covers 20,000 square feet, with 14,400 square feet of instructional space.


Classroom Pod
Classroom Pod
Classroom Pod
Classroom Pod

Second Floor Plan


Classroom Pod
Classroom Pod
Gymnasium
Mech
Auditorium
Main Office
Library
Kindergarten Wing
Kitchen
Cafeteria
Main Entrance

First Floor Plan Main Entrance

Currently, there are no standards for the size of academic learning areas which vary from state to state. However, there is nationally, one organization that has begun to rethink the sizes of educational spaces. In their Guide for School Facility Appraisal, the Council for Educational Facility Planners International (CEFPI) state, "New forms of instruction require greater amounts of space than in the past. Special education, remedial classes, cooperative learning, and community participation all create spatial requirements that differ from earlier periods of education."

CEFPI recommends the following: The "building capacity" of an elementary school (the number of students capable of occupying a school facility) can be measured by taking the total gross square feet of the facility and dividing by 90 GSF/student (90 GSF being a CEFPI recommended number). The recommended gross square footage per student for kindergarten and pre-kindergarten classes are: minimal 30-35 GSF/student, acceptable 36-40 GSF/student, ideal 40-48 GSF/student. The recommended gross square footage per student for elementary classes: minimal 23-27 GSF/student, acceptable 28-30 GSF/student, ideal 31-36 GSF/student.

Taking these standards as a means of assessing the conditions at Coldstream Park, the school building is below its capacity of 855 students at 577 students (at the time of the assessment). Pre-kindergarten and Kindergarten classrooms are 'ideal' at 55 gross square feet per student. In addition, the First through Fifth Grade classrooms are 'ideal' at 31 gross square feet per student.

Not only do students enter the main entrance lobby, an entrance in the center of the "H" building is opened, as well as the kindergarten wing. Although multiple points of entry are effective in reducing bottlenecks at the main entrance and lobby, it does pose a security problem in that more entrances must be monitored for intruders. Most of the concern over intruders comes from teachers in the Kindercourt Wing where the entrance is often propped open in part due to people not completely closing the doors but also due to improperly functioning door closers.

The security issue has unfortunately affected the main entry. Although it has been unlocked and welcoming for visitors in the past, due to a series of recent daytime intruder incidents, the maintenance staff recently installed a buzzer system like many other schools have in Baltimore City.

Ms. Franklin, a special education teacher on the first floor described a recent robbery incident that had occurred in her classroom, over 150 feet from the main entrance: "A person came in early in the morning and took tape recorder and packed it in a little tote bag and exited the room with it. Our room was in disarray and we had to clean it up. The students told everyone they came in contact with what had happened, including their parents . . .they were very aware of it."

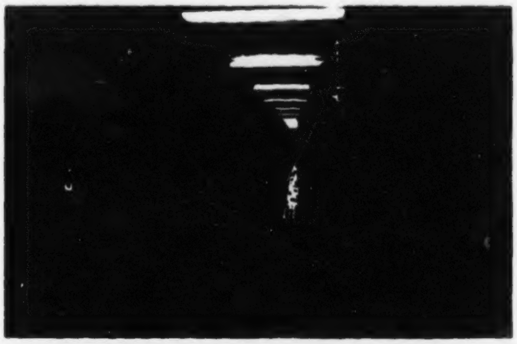
"We had a Code 31 the other day, and they [her students] saw me get up and lock the door, and they asked 'what does that mean?...why [did] you lock the door?,' and I said, Code 31 means to lock the door [because] there may be an unauthorized person who has entered the building." [Special Education Teacher]

Teachers in the working group are well aware of the implications of safety and security problems on the ability of students to focus on learning. Due to recent incidents the custodian has established a new policy to lock the main entrance doors very soon after classes start and again directly after dismissal.

Corridors leading to classroom pods are long and difficult to fill with a dense array of displays, although displays that are up are impressive and pleasant. There are no dropped ceilings on the second floor creating rather uncomfortably tall corridors. Mechanical ducts, although painted white like the structural concrete roof above still are not attractive to look at. Added to this are hanging fluorescent tube lighting that create an uneven glare on wall and floor surfaces. Teachers and students have managed to create visual displays and provide hanging plants that offer distraction from these more sterile architectural features of the corridors. One wonders why an acoustical lay-in ceiling was not provided on the second floor as it was on the first.

A view of the main entrance to the school from the parking lot. The school doors remained open until this Fall when a series of thefts occurred. Now a buzzer has been installed.

Creating and maintaining the various corridor displays throughout the school is one of Ms. Chaney's tasks. A supplemental teacher, Ms. Chaney works with groups of students in creating what she calls "changes of scenery" each month. Students come up to her all the time and say, "Oh, look, look, I did this right here!" She proudly describes a time when one student caught another student ripping at the corner of an Easter display and scolded him for doing so explaining that he should be respectful of the work of others.



Coldstream's corridors can be long and disorienting even with wayfinding signs, colorful wall displays and handing plants.

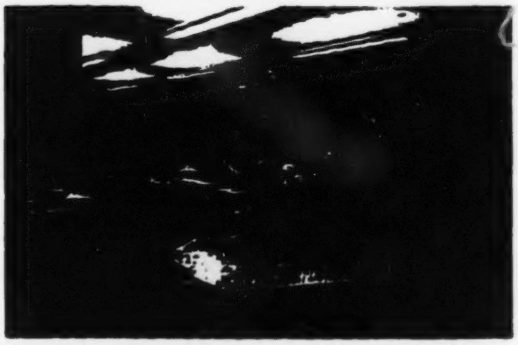
On the second floor of Capable Coldstream their are four separate wings as described by the "H" building layout. Each wing contains two semi-open pods each of approximately 1,800 square feet. Each pod originally was designed for a team teaching educational model where two teachers shared a larger room, a double room, that could be instructionally reconfigured in any number of ways.

In all classrooms on the second floor and in a few on the first floor, a partial wall serves to divide the larger pod into two distinct classroom areas. When two classes share a pod, they almost always create a barrier between each other of movable partitions: chalkboards, A/V tables, bookshelves; anything that forms a barrier. In effect, teachers choose to conduct their instructional activities in as self-contained a space as possible. Some classes continue to maintain a row and column desk arrangement, evidence of a more traditional layout, not indicative of the ideals of cooperative learning.

Team teaching is not being practiced, so the advantage of the larger space is not being fully realized and teachers are instead experiencing the standard problems of conducting large group instruction in an open plan space. Even though teachers are surrounded by full walls or partitions on three sides and half a wall on the fourth (75% + 12.5% = 87.5% enclosed, not accounting for movable partition barriers), they still experience problems with noise and distraction from the other class in the pod.

"We are always aware of the movement of children and even when the other class is being thoughtful, distractions are always there...we are always concerned about noise issues." [Fifth Grade Teacher]

Ms. Thompson, a teacher on the second floor, does not see distractions as a big problem since it is inevitably something that can be dealt with through classroom management techniques. In fact, the working group, during the workshop process, surprisingly did not even include it as an environmental issue that needed to be addressed. In an attempt to manage the distraction problem, Ms. Thompson explains, "Sometimes I will pull children away from the common wall to not disturb the other class," she continues, "We try to keep movement to a minimum, moving in small groups to reduce the noise from the banging desks." Ironically, one of the central defining features of the cooperative learning philosophy is free movement from one activity area to another. Although teachers did not explicitly mention the implications of the current classroom layout, it is possible the present configuration of classes and classroom management techniques may to some degree be limiting their instructional effectiveness.



Many classroom pods are occupied by only one class providing more than enough space.

This shared space is only a problem in three of the pods on the second floor containing six classes in total. The other five pods contain only one class each: two 3rd Grade classes, two 4th Grade classes, and one 5th Grade class. Each of these classes use these pods to differing levels of effectiveness. Most classes occupy only the central space with a grouping of desks straddling the two differentiated areas, while one class uses only one side to the exclusion of the other. In most cases, evidence of well-defined activity pockets were not readily apparent.

In the final analysis, some classes have more than enough space, while other classes are tightly sharing space; there seems to be no happy median. When possible the principal, Ms. Windsor has assigned larger classes to occupy an entire pod; this seems to be the most equitable strategy in the short term. In addition, as the principal emphasizes, demographic shifts might fill up these classrooms as they once did a few years ago. Also, Ms. Windsor reiterates that instead of focusing on the problem, her teachers have been able to focus on being more resourceful in working constructively with the spaces that they do have. Her observation was borne out in the fact that teachers did not even see classroom adaptability as a problem.

There were, however, issues beyond noise and distraction and classroom layout that teachers appeared to be more concerned about: adapting their classrooms to future technologies, replacing carpeting, and issues concerning thermal control.

Some teachers in the working group felt that three electrical outlets per room were not enough and that there will be a future need for special telecommunications outlets to make the classroom adaptable in anticipation of computers (recently twelve computers were donated for classroom use). Unfortunately, just a few years ago, a cable wiring project had started and stopped without being completed.

The carpeting in most classrooms is over a decade or more old, is lifting up in spots, shows a multitude of stains, and even after cleaning, often emits odors. Carpeting is most critically a problem in the pre-kindergarten and kindergarten classrooms. As one Kindergarten teacher clarified, "We spend most of our time on the floor. Children often get sick on the floor and the carpeting needs to be cleaned much more often than in upper grade levels...so, its a high priority for us."

Probably one of the most critical problems for teachers in the working group was thermal control. Some teachers, describing how they cope with thermal problems state, "We take the law in our own hands", by using a small wrench to manually turn on and off the unit ventilators in their rooms. As one teacher playfully boasts, "If I'm uncomfortable, I can flip a switch." To further control the air quality of their rooms teachers often open their windows to provide fresh air. Although some teachers have a perceived control over their thermal state of the classrooms, others clearly do not.

"When I came into the boiler room, the flames from the boiler were coming up so high, I thought for sure it was going to blow!" [School Custodian]

As one extreme case illustrates, thermal control is a high priority to teachers in this school. The school's custodian describes a winter morning in the recent past when a teacher, upset by the cool temperatures in her classroom, learned how to get into the boiler room and turn on the boiler. The obvious problem is that some classroom unit ventilators are unfortunately more difficult to control than others.

A teacher describing a problem experienced by her fellow teacher states, "In Ms. Terry's room you cannot breath in her room its so hot." Another teacher exclaimed, "I came in the morning to my room and it was so hot I touched the top of my record player and it was warm." Another teacher expressing her frustration, remarked, "All day I'm turning the heat on and off... all day, on and off, on and off..."

During one particular week in the winter, Ms. McCullen, a kindergarten teacher first could not at first get enough heat in her room, then after some repair work, found she could not turn the heat off when she wanted. Ms. McCullen explains, "We had no heat the other day so we had to go to another room...and then yesterday it was hot and I was told don't turn the heat off anymore because if you turn it off it ain't going to work, so now we have our windows all the way up." Ms. Windsor, the principal, remarking on the abundance of thermal control problems at the school told a short story about how the school engineer came in one day this last year and asked to have his work performance rated. Ms. Windsor simply stated, "We have had so many complaints, how can I rate you?" Clearly, this is a problem that has everyone, including the engineer, frustrated.

For Ms. McCullen, this is not the only environmental problem she has had to face in the kindergarten wing. The Kindercourt playground located behind the school to the west has not been used other than for semi-annual cook-outs due to its perception by teachers as being an unsafe outdoor area.

The blacktopped playground located west of the Kindergarten Wing stands silently abandoned. The playground equipment has long since been destroyed. All that remains of the playground, other than the cracked blacktop surface are remnants of the fence surrounding the playground. Although it has been completely removed, the fence door and the posts have amusingly remained. Adding to the sense of isolation in the playground is that there is a lack of direct visibility to the playground from the classrooms.

Drug paraphernalia and broken glass is found routinely by custodians in both the playground area and the surrounding grass play areas. Even though the kindergarten class does have the option of using the open field across from the driveway in front of the school, the grassed location directly north of the kindergarten wing would be a prime location for a new playground due in part to its direct visual and physical proximity to all three kindergarten classrooms.

Even with the problems surrounding the upkeep of the grounds, teachers agreed that the siting of the building provided many amenities that other city schools do not have. As Ms. Thompson states, "Even though your in the heart of the city, due to the siting of the building you have open space which I think is kind of nice...the track gives children some real freedom to move about that is far from a busy street."

The upkeep of grounds has been a reoccurring issue for the school: the grass is not regularly mowed, and garbage has collected along the fence lines of the school property. As the prinicipal explains, the responsibility for the grounds upkeep belongs to Baltimore City, and is not contractually a school task. However, n the desire to maintain the grounds to a minimum level of quality, the school custodian has unofficially assumed this task.

The playground has become completely unusable

The custodian, defending his position with regard to the upkeep of the grounds explains that he has lost a substantial amount of custodial assistance as a result of recent budget cuts across the district. Five custodians used to work at this school, now he shares all custodial work with one other full-time and one part-time position worker. To graphically illustrate the nature of the problem, he explains, "We used to fill a large high school auditorium with custodians, now they can all fit in my smaller elementary auditorium that holds 340." From his count, that amounts to approximately 340 custodians for over 177 schools within the district, or just under two full custodians per school on average. In the custodian's defense, the prinicipal, Ms. Windsor remarks that the facilities staff are "...doing an excellent job considering the small number of staff that we have," adding, "They are overworked." In addition, the working group agreed with the principal that the interior of the building itself is clean, inviting, and well maintained. As one teacher comments, "... looks well for the most part...the inside of the building? I would invite the President over!"

During lunch periods, the cafeteria becomes a noisy and exciting social place. Students, no longer "contained" in classrooms can let off a little steam while they eat their lunches. They sit on standard sixteen foot collapsible tables, the ceiling is full of hanging Rhododendron plants, shiny cardboard stars, and various cartoon characters from Snow White and the Seven Dwarfs. Teachers during this period of the day get their break from their students as well by retreating in shifts to the Teachers' Lounge.

Although of only a moderate priority, the working group felt that the teachers lounge "could be more inviting" and currently "is not the kind of place teachers can go to relax or unwind" during lunch breaks. Thewood framed couch is damaged and in need of repair, additional seating and table furniture is needed, and the room needs to be better cleaned, organized and managed. The principal agreed with the teachers on the problems associated with the Teachers' Lounge, although adding that teachers need to take more care to keep the lounge clean during their shift.

As students from the kindergarten wing hike back to class from the cafeteria, one can see them fowing small blue directional arrows taped to the floor leading to their respective rooms. The teachers explain that the directional arrows promote orderly two way lines in order to minimize running into opposite traffic which is often a problem during the first weeks of school, after which they get more accustomed to the routine. Students are quiet and walk in lines with few deviant problems. These lines, teachers explain, provide a cue to students reminding them of the accepted behavior in the corridor even when the teacher is not present.

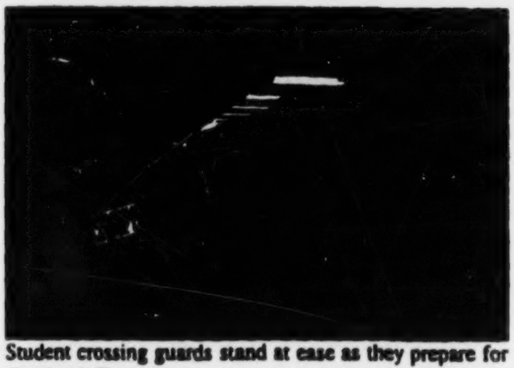
The Cafeteria: an exciting social place

Quite unlike the lockstep behavior patterns encouraged in the corridors, students are provided ample opportunities to personally express themselves and take ownership in their school. As mentioned earlier, the Plant Brigade offers an opportunity for students to not only learn how to care for plants, but also to participate in making Capable Coldstream both appealing and welcoming.

"I try to make it personal by taking snapshots of each child and putting them on the board alongside a statement of what they want to do with their future, what they want to strive for to pick up their self-esteem and motivate them." [Special Education Teacher]

Within the classroom, Ms. Franklin tries to give her students an opportunity to personalize their space. She doesn't stop at posting photographs; to give them a sense of ownership beyond their own classroom, Ms. Franklin claims, "We extend our work not only in our classrooms but we bring it out into the hall and we feel proud about it and we share it."

As students begin leaving the building immediately after dismissal, a small team of student crossing guards, or "Safeties" as they are called, station themselves at each of the corridor intersections to make sure students are orderly and are not running through the building. The Safeties take their job very seriously and consider it a privilege.



Student crossing guards stand at ease as they prepare for dismissal. Their job is to insure students exit safely from the building

Directing auto traffic is a constant concern for the principal. In the past, parents would drive up the back exit causing traffic problems. This was resolved by requiring all traffic to enter and exit the site from Exeter Hall Street; even though the sign at the entrance still reads "Entrance Only". The drive-through lane that runs along the front of the school is closed off to parents and visitors during dismissal in order to avoid any potential cross-traffic safety problems. This policy is reinforced by the use of student crossing guards and orange cone markers, however, parents still routinely disregard these signs increasing the potential for accidents.

Students begin the long process of dismissal in which each class is escorted from their classrooms to the outdoors where parents are anxiously waiting. Some younger students, fresh from a trip to the neighborhood pumpkin patch earlier in the day, emerge joyfully from the school entrance doors with decorated pumpkins in hand ready to show their parents.

Students outside the main entrance at dismissal

FINDINGS & DISCUSSION

The previous section describes in some detail the more critical of the twelve (12) distinct environmental quality issues of concern at Coldstream Park Elementary School identified by the working group (See Appendix B for a full description of all environmental concerns).

Some of these issues overlap and in some cases, contradict each other. For instance, the desire for natural daylighting, fresh air and outdoor views were often overruled by more critical needs for security from potential intruders, which dictated the locking of first floor windows. To further understand the implications of these issues on the educational process, through the assistance of the working group, issues were categorized by (a) ten attributes of environmental quality, and (b) their potential influence on three broadly defined educational process outcomes: student performance, student social development and teacher instructional performance.

Ten distinguishable attributes of environmental quality have emerged from the intersection of the researchers' findings in Baltimore City Public Schools and what is known from previous research literature. Not only was there a desire to understand the nature of the interaction between the various attributes of environmental quality, but the appraisal of teacher perceptions of the potential influence on the educational process was desired as well. What follows is an analysis of the relationship between these attributes of environmental quality, the issues raised in the working group and their perceived potential impact on the three educational process outcomes.

1. Physical Comfort and Health *refers to the degree to which occupants feel the indoor environment meets occupants' physiological needs with respect to thermal and air quality, illumination, noise and odors.*

- After Safety and Security, physical comfort and health was the most frequently discussed attribute of environmental quality for the working group. The two issues associated with this attribute were Old Carpeting (#5) and Thermal Comfort (#6) both identified as high priorities.

- Old Carpeting (#5) was seen as potentially affecting student performance in that it may be a contributing factor, primarily for Kindergartners, of various health problems.

- Thermal Comfort (#6) was seen as one of the most critical problems in the school. The working group believes thermal comfort may potentially affect all three educational outcomes; student performance, social development and teacher performance, by adversely influencing both student and teacher behavior, attitudes, mood and health.

2. Classroom Adaptability *refers to the degree to which occupants feel that the physical classroom space can be adapted to different and desired educational activities and functions.*

- Classroom adaptability was also not a major concern for the working group other than some low priority concerns for Additional Electrical Outlets (#12) which was seen as being a factor in influencing opportunities for both student and teacher performance.

3. Safety & Security *refers to the degree to which occupants feel the school building contributes to protecting occupants from harm, injury, or undue risk.*

- Safety and Security was by far the most often mentioned environmental quality of concern for the working group. Four issues were of high priority: Multiple Points of Entry (#1), Unsafe Kindergarten Playground (#2), Cross Traffic Safety (#3), and Emergency Lighting in the Stairwells (#7), while one issue, Upkeep of Grounds (#8) was of moderate priority.

- The working group felt that Multiple Points of Entry (#1) may simultaneously affect student performance, social development, and teacher performance in that experiences brought into school by students and teachers could adversely affect their ability to focus on the tasks of learning and teaching.

- The Unsafe Kindergarten Playground (#2) issue was seen as potentially affecting social development of students adversely through the limited opportunities for safe places to play.

4. Building Functionality *refers to the degree to which occupants feel the various places within the school building are functionally compatible with the school's educational programs and activities.*

- There were few building functionality issues of concern to the working group. ADA Accessibility (#10) and the Cafeteria/Auditorium Partition (#11) were of low priority, while concerns over the Teachers' Lounge (#9) were of moderate priority.

- ADA Accessibility (#10) was seen as possibly affecting a disabled student's social development if they were not able to participate in all of the activities of the school due to lack of access.

5. Aesthetics & Appearance *refers to the degree to which occupants feel the school building is attractive and provoking.*

- Issues of aesthetics and appearance were the third most cited set of concerns for the working group: two are of high priority, Old Carpeting (#5), Unsafe Kindergarten Playground (#2) and one of moderate priority Upkeep of Grounds (#8).

- Aesthetics and appearance were most associated with potentially influencing social development as illustrated by the issues of Unsafe Kindergarten Playground (#2) and Upkeep of Grounds (#8).

6. Personalization and Ownership *refers to the degree to which occupants feel the school building offers opportunities to create a personal and self-expressive environment and engender a sense of ownership.*

- Unsafe Kindergarten Playground (#2) illustrated the lack of ownership that some segments of the community have taken with the school grounds: the grounds are routinely trashed and the playground's fencing has been systematically stolen.

- Within the school, teachers provide many opportunities for students to personalize their classrooms by displaying student work, and take ownership of their school through participation in the Safeties, Plant Brigade, and other school service-related tasks.

7. Social Places (Places for Social Interaction) *refers to the degree to which occupants feel that places within the school building provide opportunities for meaningful social exchange and interaction.*

- Coldstream Park has several positive social places all arranged around the main entrance and lobby that effectively demonstrate the spirited personality of the school.

- Some places of concern to the working group in terms of social interaction, were the high priority issue of Unsafe Kindergarten Playground (#2) seen as affecting student social development, and the low priority concern with the Teachers' Lounge (#9).

8. Privacy *refers to the degree to which occupants feel that there are places within the school building which provide opportunities for an individual or a small group to be free from the intrusion of others.*

- The issue of privacy was not of main concern to the working group. The large building capacity appears to allow for plenty of opportunities for students and teachers to find places to get away when needed. Many classrooms, clearly intended for use by two full-size classes, are currently occupied by only one class, thereby offering many opportunities for getting away from the group.

9. Sensory Stimulation *refers to the degree to which occupants feel the school building provides a stimulating environment for learning that is safe yet challenging.*

- Unsafe Kindergarten Playground (#2) was the only issue that was seen as not providing the necessary sensory stimulation for students. Within the school building, the working group was satisfied with the quality of sensory stimulation.

10. Crowding/Spaciousness *refers to the degree to which occupants feel the school building cannot adequately accommodate the number of students and teaching staff occupying it.*

- Crowding was not perceived as a problem for the working group, despite the fact that several 3rd Grade classes reached 37 students, a 4th/5th combination class was at 36 students, and several Kindergarten classes consisted of as many as 35 students.

- One factor within the school contributing to a sense of spaciousness is the layout of wings on each floor creating smaller groupings of classes. Additionally, two wings on the second floor, capable of supporting four classes are occupied by only two classes, while a third wing is occupied by three classes. Demographic changes, evident in the large class sizes of 3rd Grades and Kindergarten classes may change this configuration of classes in the following years.

CASE STUDY REPORT:

Mildred D. Monroe Elementary School #32

PROJECT OVERVIEW

This report documents specific environmental quality concerns of one of five elementary schools in the Baltimore City Pubic Schools. This report serves not only as a record of the environmental quality concerns themselves, but also describes the assessment process within which these concerns have arisen.

This section provides an summary of the project objectives, problem and approach, and process and procedures of the Baltimore Environmental Quality Assessment Project.

Objectives

The objectives of the Baltimore Environmental Quality Assessment Project project were to:

- develop an occupant-driven environmental quality assessment process through which environmental quality concerns can be creatively identified, addressed and influenced by school occupants themselves.
- assess environmental quality from the perspective of the experiences of students, teachers, staff, administrators, and parent volunteers in each of five Baltimore City Public Schools that chose to participate in this project;
- understand how environmental quality may or may not contribute to the educational process in each school with respect to Student Academic Performance, Student Social Development, and Teacher Instructional Performance; and,
- understand the role of facility management in maintaining and improving environmental quality.

For Mildred D. Monroe Elementary School #32, this report documents specific aspects of environmental quality of concern to the school. The assessment process was not conducted to judge the final worth or merit of the school as it relates to environmental quality. Rather, the intent of this project was to provide information useful for improving the environmental qualities of the school, especially those that may have some impact on the effectiveness of the educational process. It is the hope of all involved, that the results of this study be considered an affirmative step toward improving environmental quality at Mildred Monroe.

Problem & Approach

School officials across the U.S. increasingly recognize the impact of environmental quality of the school upon the educational process. Deteriorating conditions caused by poor indoor air quality, asbestos abatement, fire code violations, and deferred maintenance policies are publicly recognized as major contributors of serious health and safety problems for students and teachers.

Additionally, environmental quality may affect behaviors, attitudes and performance of students and teachers which may, in turn, have an impact on organizational effectiveness and educational outcomes. What role these environmental factors play in influencing educational effectiveness and outcomes, and how they interact in contributing to educational quality is less understood.

In order to clarify the link between environmental factors and the educational process, this study begins with the investigation of environmental qualities directly experienced by students, teachers, staff and parent volunteers in five local school settings. Although the individuals from every group were interviewed, teachers were found to be the most involved in the process.

This study is particularly interested in uncovering those environmental quality concerns that school occupants see as supporting the purposes, activities and educational goals of the school. How well the physical setting responded to the demands of the educational process comprised its environmental quality or value.

In addition, this study has been designed to provide an example of how a school might begin to improve environmental quality through an organizational development process of identifying and addressing mismatches between the facility and its educational activities, programs and goals.

Process & Procedures

Each school case study investigation followed a research process in which a selected number of teachers and administrators participated in actively clarifying the scope of the project, identifying and prioritizing environmental quality problems, issues and concerns, and formulating strategies for addressing these concerns.

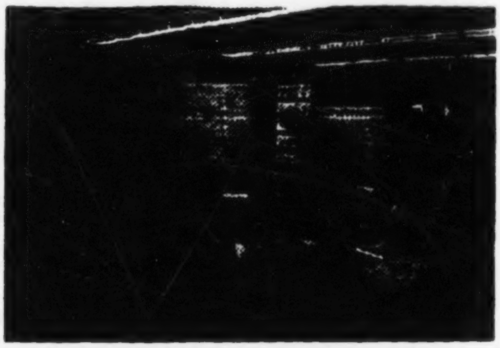
The report that follows briefly summarizes the project activities and assessment process conducted within a six month period between July, 1995 and December, 1995. Any mention of individual names are fictitious to protect the anonymity of participants in the study.

In July of 1995, Mildred D. Monroe Elementary School agreed to participate in the Environmental Quality Assessment Project.

During a visit on July 31, 1995, a physical inventory and preliminary walk-through of Mildred Monroe was conducted, along with interviews of the principal and the head custodian.

During a visit on September 19, 1995, a full day of observation was conducted which included behavior mapping, informal and formal interviews with teachers and photographic documentation of the school-in-use. In addition, 45-minute semi-structured interviews were conducted with three classroom teachers and one instructional specialist. Each teacher was asked to fill out a teacher survey-worksheet, as well as to administer a student survey.

Prior to a visit on October 23, 1995, information gathered from the previous visit was tallied and organized into a series of potential environmental quality issues to be discussed during the workshop. Workshop materials included a list of all issues, floor plans showing the location of issues throughout the building, a presentation board containing photographs of problem areas. Also included were individual issue cards and a blank matrix worksheet for ranking issues by priority (high, moderate, low, none) and the potential impact, if any, on one of three educational outcomes (student performance, social development, teacher performance). The workshop, with a working group of four teachers and the assistant principal, lasted a total of 90 minutes.



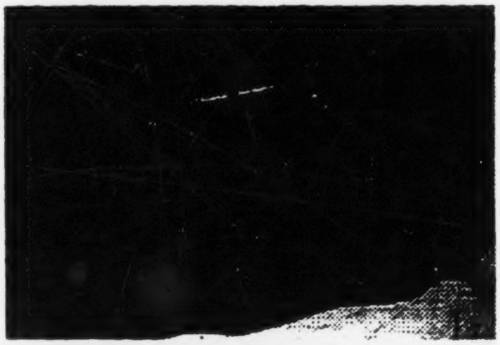
Environmental concerns were identified and prioritized during the workshop.

During the months that followed, a teacher survey was administered to gather further information regarding teacher perceptions of environmental quality and was collected in mid-December 1995.

COPING WITH CHANGE

Mildred D. Monroe Elementary School has gone through many changes in its long history as a school in the Greenmount West neighborhood. Unfortunately, recent changes in demographics and school management threaten the very survival of this small school. The school, however, perseveres, and in the words of one teacher "we do what we have to do."

The present Mildred Monroe School was constructed and occupied in 1967, directly adjacent to the original Guilford Avenue School built in the 1890s which still stands and is now the headquarters of the Greenmount Improvement Association and Urban Services. In 1980, at the request of the community, the school's name was changed to Mildred D. Monroe Elementary School to honor the memory of their beloved and dedicated custodian, who served the school for many years.



View of the main entrance to Mildred Monroe on Guilford Avenue

Mildred Monroe Elementary School is located in the Greenmount West neighborhood, north of the Central Business District, about three quarters of a mile north on Guilford Avenue. The school is bounded by Guilford on the east, Landale Street to the north, Federal Street to the south and a city alley that borders a parking area to the west. Surrounding the Mildred Monroe school site are industrial buildings to the east and boarded up rowhouses to the north. To the west are rehabilitated and gentrified rowhouses that extend up and down the majority of Calvert Street, one of the main streets (Interstate Route 2) extending from the CBD one-way north (along with St. Paul one-way south) to the John Hopkins University Campus about one mile north. Though the Greenmount West neighborhood is considered one of the better neighborhoods with respect to crime and drugs it still has its share of urban problems.

"I have certain families where they stay for three months and then they move to another family member's house ...they stay for three months...they move to another family...they may come back next year." [Principal]

The enrollment at the school has been in a state of slow decline for the past few years. At the time the school was being built, the neighborhood had a growing population. Since that time, however, the neighborhood has continued to decline, in terms of school age children, due in part to the rising costs of living in an area that is in the process of regentrification. The neighborhood housing infrastructure has been gradually increasing in value as a result of extensive rowhouse revitalization efforts. According to the principal, the upper grade classes are full, but the lower grade classes are not filling up as rapidly.

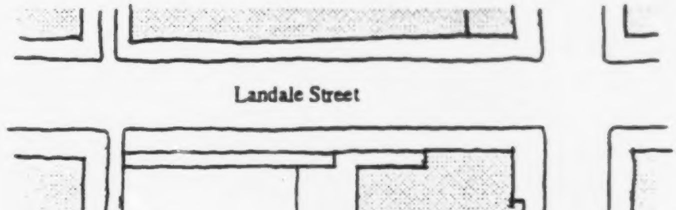
Ms. Norman, the school's principal, estimates that the community surrounding the school has a family mobility rate of nearly 50%. This is due in part to the realities of impoverished families living in rental housing. She explains, "Right now I have one kindergarten but I'm not worried because...they just haven't come in yet...I had 38 children on roll in September, by the 1st of October I had 34 children and they were not all the original 38. Eight had moved out, two had moved in...at least the building isn't going to move!"

Later in the year, there had been more major fluxuations in class sizes, providing yet another example of the affect of eratic mobility on the organization of Mildred Monroe. Twenty-two second grade students were shifted to other classes due to one teacher being reassigned to another school because of Monroe's lower enrollment. The objective in sending students to two other teachers was to keep the 2nd Graders together as a group to respect and maintain their "informal social formations". The students were encouraged to "redesign" their space, eat together and do the same homework. Teachers cooperated in making the transition work for the students. The principal claims that the transition was more difficult for parents to accept than their children, due to their familiarity with their child's original teacher.

Mildred Monroe began the year with an enrollment estimate of 271 students served by a staff of eight classroom teachers, a head teacher and a special education teacher, occupying a the total of nine classrooms in the building. By the middle of the school year, they were only serving 232 students, down 39 students from their projected enrollment for the year. Ms. Norman adds, "I could get another 100 children and I wouldn't fill this building."

The result of this mobility and slow decline in population in the immediate neigbhorhood is that the school's capacity is not being fully realized. A total of three full sized self-contained classes are vacant on the first and second floors. Unlike many schools in the district, there is no shortage of space in this school. These extra rooms are either completely vacant, or in one case, a teacher resource room has been created.

Beginning on July 22, 1992 and ending on March 7, 1996, Mildred Monroe had been designated as a Tesseract school managed by Education Alternatives, Inc. (EAI) a private educational management firm, the lead partner in what was called the Alliance for Schools that Work· The Alliance for Schools That Work was a joint partnership between Educational Alternatives, Inc. (EAI), Johnson Controls, Inc., KPMG Peat Marwick and Computer Curriculum Corporation: EAI was the lead member of the Alliance, responsible for all instructional services; Johnson Controls was responsible for all non-instructional support functions including custodial, maintenance, grounds, security, and administrative services; KPMG Peat Marwick was responsible for managing the schools' fiscal operations; and



Site Plan

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Computer Curriculum Corporation was responsible for developing the computerized curriculum used by EAI.

The Alliance's charge was to manage, operate and maintain nine public schools totaling 810,800 square feet of space and serving over 4,800 students. The Alliance provided Mildred Monroe and eight other elementary schools with new computers and software, rehabilitated the school buildings, and established the Tesseract educational program.

Facility improvements included lighting retrofits, mechanical system renovations, roof replacements, window replacements, landscaping projects, intrusion and fire alarm upgrades, bathroom remodeling, extensive painting and carpet installation.

The Tesseract educational program is the result of the review and organization of several years of research on the components of elementary education that have been found to work which include: (a) a Personal Education Plan (PEP) for each student to set goals for learning to be signed off by parents, (b) staff development meetings held once a week on a variety of topics such as learning modalities and computer training, (c) instructional interns or aides with college degrees (but not necessarily with educational training) to increase the number of adults in the classroom, (d) Tesseract tests to complement standardized tests, (e) new instructional technology — four computers in every classroom and a central computer room using software developed by one of the Alliance partners, (f) learning activity areas and movable furniture, and (g) increasing parental involvement through the institution of Personal Education Plans, encouraging parental participation in the classroom or on field trips, in PTAs or attendance at school functions. Other innovations brought in by EAI were telephones in classrooms so teachers could contact students' families, increased supplies in the classroom, use of whole language and whole math, the use of a Learning Style Assessment, and customized instruction.

Although the Tesseract experiment abruptly ended after only three and a half years of an original five year contract, Mildred Monroe continues to operate, coping once again with a change outside of its control. During my interview with the principal Ms. Norman at the time the Tesseract program was still in operation, she stated, "the teachers here are willing to make adjustments...in order to have the Tesseract philosophy work, people have got to be willing to change what they normally do in a classroom...these teachers have been willing to make these changes."

Now that the Tesseract program has ended, the principal plans on retaining many of the strategies brought to Mildred Monroe when EAI leaves, such as identifying learning modalities, morning meetings, and the emphasis on small group instruction over large group instruction. "Who knows, maybe we will be able to keep the name Tesseract," Ms. Norman muses. In addition, the principal is interested in retaining contracts with as many of the private contractors as is feasible.

Some parents drop off their children in the playground in the back of the school as early as 7:30 AM before going to work . The children hang out in the playground using the entire parking lot area as their playspace. Some children swing from the monkey bars, while others play near the blue painted fence of the tot lot. An elderly man stands nearby watching his grandchild play within the bounds of the tot lot. Some children are dropped off by their parents on their way to work, other older children arrive from all directions at the back lot of the school unattended by an adult.

Students are not allowed into the building, the principal Ms. Norman explains, until school begins due to lack of supervision. Allowing them to come into the gym or cafeteria on cold or rainy days is not possible, according to Ms. Norman, because they lack the necessary supervision. Another problem is that if supervision is provided, it may be perceived as a form of daycare for parents eager to drop off their children. In any event, Ms. Norman explains that providing this "daycare" service for parents is not within the present budget of the school.

"When I came this summer I had two matresses and a sofa...an old TV set...a hot water heater...a washing machine and a dryer and a rug...the only thing I haven't had yet is the kitchen sink!" [Principal]

The property just north of the school grounds, owned by Urban Services, is lacking in appearance and unfairly reflects badly on the school. Most of the discussion of the working group focused on the poorly maintained dumpster on the Urban Services property in full view of the school. Resolving this issue was a high priority for the working group. Unfortunately, the school has little recourse for improving this situation. The school has had to deal in the past with several city agencies if they wanted the garbage to be picked up. It is clear that the surrounding neighborhood residents have taken advantage of the school's efforts to have garbage regularly removed by using the dumpster to rid themselves of their own garbage — residents presumbly have problems as well getting their own trash collected. Bernard, the school's head custodian, acting on his own initiative, was for a time able to empty the Urban Services dumpster by hauling off garbage to a nearby landfill. Unfortunately, since his truck has had to be serviced, he has not been able to continue this generous service.

Ironically, this dumpster belongs to the property which houses the Greenmount Improvement Association (GIA), an association dedicated neighborhood improvement and beautification, and which rents the top floor of the Urban Services Building. (GIA's long-term goal is to demolish many of the old boarded-up homes in the area and gain additional green space in the Greenmount neighborhood, which was once on the suburban edge of Baltimore.) The unsightliness of the Urban Services property often does the school a disservice by giving visitors the impression that the school

Poorly managed Urban Services dumpster

grounds are not well kept. Renovation of the existing Urban Services building continues slowly, however, the site surrounding the building has not been maintained to the satisfaction of Mildred Monroe.

The existing city alley, directly adjacent to the school parking lot, adds to the unsightly appearance of the boundaries of the school grounds. Large pot holes and buckles in the road have made site entry difficult off Landale Street .

The alley has been in dire need of repair and replacement for years. Teachers complain that the alley is very difficult to safely navigate dueto its dire condition. As a result, for years, few staff members have used this entry to the site.

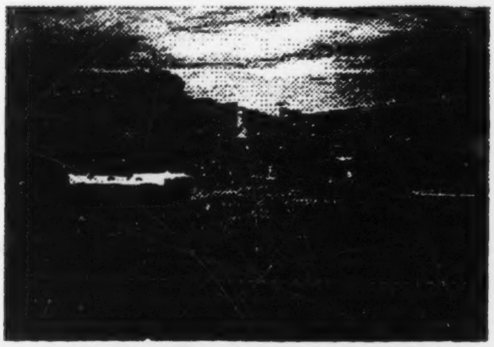
Playground safety has also been seen as a high-priority problem. As with many Baltimore City schools, the playground has not been updated since the school's original construction. Outdated metal pipe "jungle gym" playground equipment has slowly degraded to the point of being extremely unsafe. The presence of broken glass on the playground is another cause for concern. Children play kickball and dodgeball, as well as, create imaginative games to occupy their time, but in the eyes of teachers, this place cannot be considered a playground. The tot lot is nothing more than a black asphalt lot surrounded by fencing; As one teacher described it, "a pseudo-playground". In an effort to improve the playground, the school, like many others in the district, painted a large multi-colored map of the United States in the center of the parking lot. Children regularly scratch themselves on the pavement and as one teacher remarked "its not uncommon for a child to get a bloody nose from time to time playing on this equipment" (refering to the jungle gym and monkey bars). Although there have been no major accidents in the playground, the potential exists for serious injury.

The location and placement of the playground within the parking lot itself poses another potential safety concern of cross traffic between playing children and moving automobiles within the parking lot. Ms. Henderson, one of the teachers in the working group exclaimed, "Where do kids play?...I really hate the parking lot as a playground for the kids...its the pits". Although no accidents have occurred, this issue was seen as a major concern and one in need of attention.

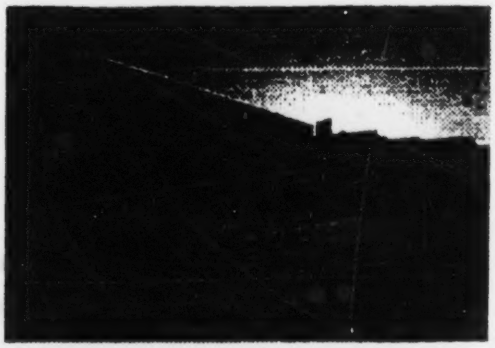
Despite these problems, the working group felt that the grounds are kept well by the custodians. According to the group, the custodial staff has been effective and alert in attempting to keep problems of the grounds to a minimum, however these issues remain an ever present concern and one they would like to be able to address. Graffitti is removed in a quick and effective manner, although it remains a moderate reoccuring problem. During a walk around the

The City alley is in need of repair

playground and parking lot in a later visit, the principal, Ms. Norman pointed out an idea she was considering a painted mural on the concrete retaining wall dividing the Urban Services site from the school playyard in response to the continuing problem of graffitt on that particular wall. There is some precedent for her idea: in the small urban park just southwest of the school on the corner of Federal and Calvert Street a bright mural has been painted on the south wall of the existing rowhouses. In fact, murals have always been used as proactive strategies to combat graffitti in many cities throughout the country. Principal Norman has, in addition, some past experience in enlisting local artists within the community. A mural on the school grounds might, hopes Ms. Norman, spark some additional community interest and pride in this neighborhood school.



Cross-traffic safety between automobiles and children is of concern to the working group.



The playground is unsafe and lacks developmentally appropriate play equipment.

Although most children line up in the parking lot in the back of the school, many parents bring their children to the front of the school on Guilford Avenue. The planters in front of the school are well kept and green offering a soft edge to the harsh urbanity. Beyond the planters lie the front steps to the entrance, a lively and social space. Two mothers escort their children to the school, they stay and chat awhile in front of the school. The busy pedestrian presence on the sidewalk leading to the school provides a feeling of security for an otherwise blighted neighborhood. The first school opens up at 8:00 AM when students enter the cafeteria for their breakfast.

Bernard, the head custodian supervises the arrival of students through the front door. Beginning at 8:20 AM students stream in very organized to their respective self-contained classrooms.

Entry to the school building is effectively controlled with a buzzer on the front door. The only time unlawful entry has been a problem of late has been in the warmer months when the doors are propped open for ventilation. With more parents visiting the school than in the past, many times there are more opportunities for people to slip through without signing in. In most cases, it appears that unlawful behavior is perpetrated by "family members" within the community. This eventuality is dealt with through the insistence of the administration for visitors to sign-in. This procedure often fails however, because some visitors may sign-in yet not travel to the destinations they claim they are going. Parents often feel they have "special rights" to walk directly to their child's class which is not actually permitted. Even with these isolated problems, the current system of controlled entry is working satisfactorily for the school.

The main entrance to Mildred Monroe on Guilford Avenue offers a soft edge to the harsh urbanity surrounding the site.

There are strong indications that parental involvement, while still low, is nevertheless turning upward. The appointment of a new parent liaison, Mrs. Reynolds, who is familiar with the surrounding community is one of the reasons for this renewed optimism. Even within the school, she exhibits an impressive display of leadership and ownership in the school, and she takes seriously her role in the educational process. Seventeen "Activity Levels" of parent volunteerism are identified in the Parent Academy Handbook from art material preparation, bulletin board and exhibit updates, to cafeteria helpers, constructing learning stations and monitoring pupil attendance.

The location and presence of the Parent Academy directly off the main lobby and across the hall from the main office is right in the heart of the school and serves to add a strong identity to the school.

Students stream into Mildred Monroe in the early morning.

The design of the main lobby and entrance is very spacious and celebratory with many signs of school pride on all the walls of the lobby including work done by parent volunteers: "Soaring steadily towards success," "I'm taking a stand on Drugs," "We Can Do At 32". Parent volunteers have a continual presence in a room centrally adjacent to the main lobby of the school and in close proximity to the main office. When one enters the school building, the first thing that is seen is the Parent Academy door, wide open, inviting and full of the energy that Mrs. Reynolds and her staff bring to the place. They have stationed chairs outside of their Parent Academy room from which they can monitor the hallways and the entrance.

"She [Mrs. Reynolds] helps parents. She helps the children. She calls your parents when you're sick. She checks your shots...lots of stuff." [Brian, a 4th Grader, about a Parent Volunteer]

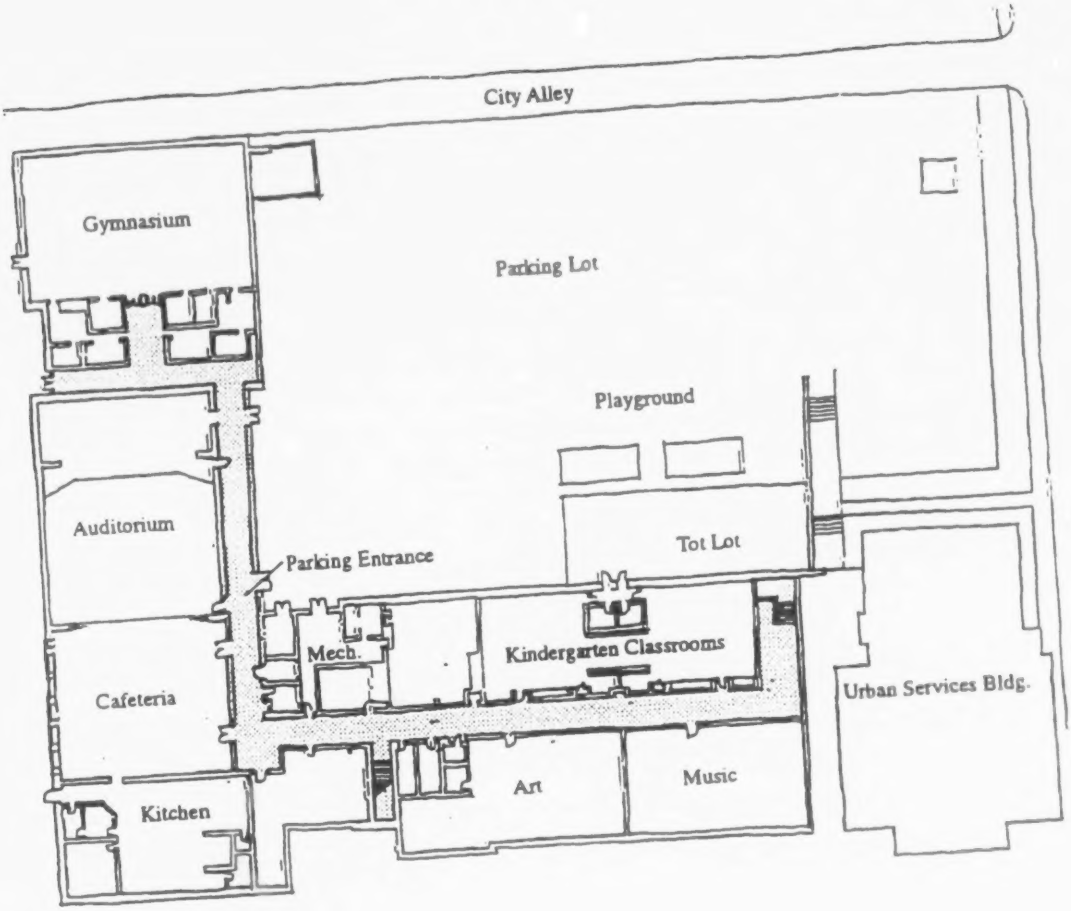
A welcoming Parent Academy

Parent volunteers are currently being trained to monitor attendance records as well as other tasks in order to support teachers directly in their classrooms. The Parent Academy offers a tangable link between the home and school environments. The parent volunteers recently created a "Say No to Drugs" poster and located it on the corridor wall outside the basement cafeteria with the intent of having students physically sign their names in a pledge to say no to drugs. Parents upon seeing this sign-up poster with their childrens' names wanted to participate and sign their own names to the poster. This could be an indication that parents have begun to get more involved in the school.

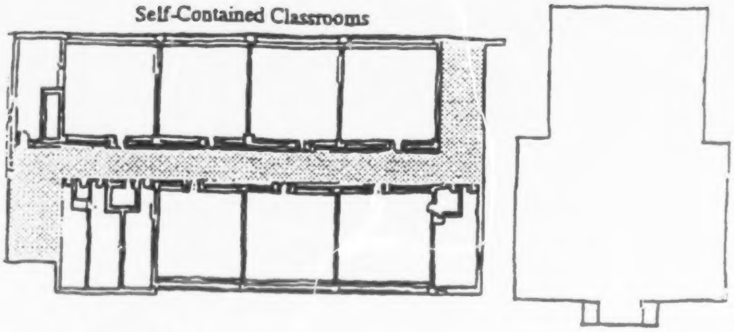
Beyond the main lobby and the Parent Academy are the self-contained classrooms located on one basement level and two above ground levels. The design of this school is a double-loaded corridor, self-contained classroom building, which, according to many teachers, serves them quite well functionally. There are several assembly spaces available for larger groups to gather such as the gymnasium, the cafeteria and the auditorium. In fact, there is ample room for the morning meeting assemblies that take place each day.

Due to decreased enrollment there are several unused self-contained classrooms available on the second floor little over a year. The function of these unused classrooms have been the subject of discussion and some experimentation. One classroom has been used as by Baltimore City Public Schools as a storage room for science supplies. Another self-contained classroom was used as a dedicated science room that was to be shared between a number of classes in the upper grades. Existing classrooms did not have the room for science learning areas so the addition of a dedicated room for science projects was a welcome idea to the staff. After a short time, however, this room came under disuse, due to a lack of management. It was the conclusion of several staff members that the dedicated science room was not managed as effectively as it could have been. Teachers generally felt it was difficult to keep the work of their class separate from the work of other classes. In some instances, projects from other classes were inadvertently knocked over. Finally, there was no one individual assigned to actively maintain the shared science room. The room is now assigned as a resource room for teachers. (A similar problem of lack of management has been of some concern with respect to the Art Room as well — although, not to the same degree). Other informal uses for empty classrooms on the second floor have been for small group learning situations, and as break-out rooms for the discipline of socially disruptive students, while basement classrooms are used for community meetings (e.g., Police Activity League — PAL — Program), after school tutors, and art and music classes.

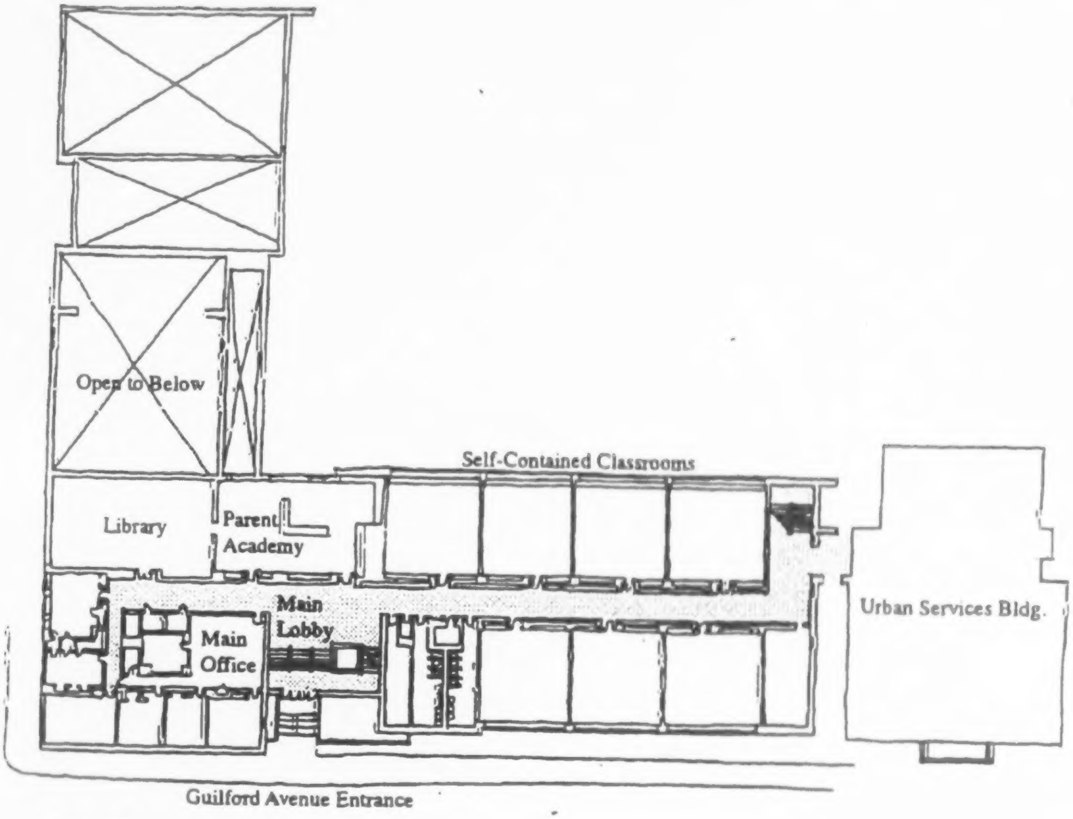
During the workshop the possibility of using one of these classrooms as a centralized teachers lounge was discussed. The existing teachers' lounge is not used due in part to (a) its remote location, (b) its poor condition, and (c) teachers not having enough time to justify


City Alley
Gymnasium
Parking Lot
Playground
Auditorium
Parking Entrance
Tot Lot
Mech.
Kindergarten Classrooms
Cafeteria
Urban Services Bldg.
Art
Music
Kitchen

Ground Floor Plan


Self-Contained Classrooms

Second Floor Plan


Open to Below
Library
Parent Academy
Self-Contained Classrooms
Main Lobby
Main Office
Urban Services Bldg.
Guilford Avenue Entrance

First Floor Plan

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its use. As the group explained, teachers take their lunches in one teacher's classroom. while the existing Teachers Lounge has become the primary hang-out of the instructional interns. When the weather gets warm, even though the Teacher's Lounge has air conditioning, these same teachers will occupy the air conditioned computer room instead located directly across the hall from this teacher's classroom. Providing a centralized lounge might increase the use of the lounge and encourage more interaction between teachers in the school. The idea was discussed and rejected as unnecessary.

Currently, there are no standards for the size of academic learning areas which vary from state to state. However, there is nationally, one organization that has begun to rethink the sizes of educational spaces. In their Guide for School Facility Appraisal, the Council for Educational Facility Planners International (CEFPI) state, "New forms of instruction require greater amounts of space than in the past. Special education, remedial classes, cooperative learning, and community participation all create spatial requirements that differ from earlier periods of education."

CEFPI recommends the following: The "building capacity" of an elementary school (the number of students capable of occupying a school facility) can be measured by taking the total gross square feet of the facility and dividing by 90 GSF/student (90 GSF being a CEFPI recommended number). The recommended gross square footage per student for kindergarten and pre-kindergarten classes are: minimal 30-35 GSF/student, acceptable 36-40 GSF/student, ideal 40-48 GSF/student. The recommended gross square footage per student for elementary classes: minimal 23-27 GSF/student, acceptable 28-30 GSF/student, ideal 31-36 GSF/student.

Taking these standards as a means of assessing the conditions at Mildred Monroe, the school building is below its capacity of 530 students at 254 students (at the time of the assessment). Pre-kindergarten and Kindergarten classrooms are 'ideal' at 58 gross square feet per student. In addition, the First through Fifth Grade classrooms are 'ideal' at 31 gross square feet per student.

Interestingly, with all these auxillary spaces available in the school building (cafeteria, auditorium, gym. library and vacant classrooms), some students still have a lack of personal space due to crowded conditions within their classrooms. Even though classroom densities are considered ideal by these standards, crowding in the upper grades can be a problem at times since older students physically take up more space. The amount and type of furniture occupying the classroom and the layout of the classroom seems to compound the problem.

A Tesseract rug and a rocking chair, two physical features of the Tesseract philosophy.

One of EAI's innovations was to remove all desks in classrooms and replace them with kidney and trapazodial shaped tables to encourage small-group cooperative learning. One teacher explained, "I'd like to go back to desks and get rid of kidney shaped tables...I can only get four students to a table with ten and eleven year olds." She continues to explain that in these small self-contained classrooms its hard to configure six kidney shaped tables. Adding to the frustration of tables over desks is the problem that students have no place to put their books and materials

Teachers feel that implementing the Tesseract philosophy physically within their classroom with specific areas or corners for math, writing, art and science is difficult if not impossible. Even though EAI gave them a short in-service instruction course on how to layout their classrooms to fit the Tessearct philosophy. Componding this problem has been the requirement to use tables for cooperative learning, which as discussed above, take up more room than the chairs once did. Problems have also arisen with the inefficient layout and installation of new classroom computers in a few rooms that take up even more space. As a special education teacher insisted, "this school was built for row and column classes period." Although the problem of fitting the philosophy to the room was frustrating to teachers and appeared to affect their own performance, it was deemed a low priority for the group.

Typical self-contained classroom with tables and small group instructional areas

When students don't always get the personal space they need, the situation often results in fights. One teacher stated: "We average several fights a week." There are a number of ways that teachers have attempted to provide students with a sense of personal space. Some strategies involve increasing student's sense of personalization and ownership. Most students for instance have individual lockers (some students have to share with others) that are all individually personalized with the student's name and some artwork they have completed in a recent assignment. Another example is due to the use of tables for cooperative learning strategies. Students do not have desks to store their materials, and as a result, many of a student's personal belongings may be stacked on top of the workgroup tables limiting effective workspace. In a situation such as this, students can become territorial about their workspace and this can become another major obstacle to securing their sense of privacy and personal space. Several teachers have developed a system of shoeboxes for students to keep their materials and supplies in. The school has thus far been unable to procure adequate undertable drawers for these tables so as to provide some additional working surface on the tables.

Storage for teachers' personal belongings was discussed by the working group as a moderate concern. Some teachers have keys to personal closets, others do not due to lost or misplaced keys over the years. As a consequence of the lack of locked storage, many teachers have lost purses, wallets and other personal items over the years. One teacher explained that her purse was stolen our of her classroom while she was in the gym with her students — she does not have a closet in the room to lock, nor does she have a lock to her classroom. The cost of resolving this problem, by re-keying or by investing in portable lockers were seen as prohibitive. Instead, teachers are asked to change their behavior — do not bring in belongings you do not want to lose. Teachers agreed that having adequate storage for personal belongings is both a safety and security, as well as a personalization and ownership issue.

Overarching these physical issues, the lack of air conditioning is the major concern for the school for a significant part of the school year. From late April or early May and continuing until school ends in June, as well as in the month of September when students and staff return in the Fall, the building can get unbearably uncomfortable. One teacher, referring to the upcoming Spring testing complained, "Its too hot! how can you test in heat? Its unfair." Another teacher brings in a small home fan to her classroom during hotter months to at least circulate some air through the classroom. To the working group, the lack of air conditioning and circulation of stuffy, hot and humid air may potentially be affecting physical comfort and health as well as limiting the effectiveness of teacher instruction and student performance. The teaching staff willingly copes the best they can with these uncomfortable conditions and admits they may be more affected than their students.

Teachers sense that students may not as be as affected as adults and that they might cope better, but at what cost? Their students are subjected yearly to hot and humid temperatures during test taking periods in the Spring. It was agreed by most staff that these environmental conditions, above and beyond performance issues, are not fair for students. In the past, in an effort to provide a more comfortable learning environment for children, the principal has gone as far as to relocate classes occupying west-facing classrooms to east-facing classrooms, or had used the library and the computer room for instruction, the only air conditioned spaces in the building other than the administrative offices and the kitchen. If these strategies fail, Mildred Monroe has a policy that is rarely used, but one that has been necessary in the past: the school is dismissed if the outside ambient temperature reaches 90 degrees Fahrenheit by 11:00 AM.

A moderate concern that arises as a consequence of humidity is the problem some teachers have with keeping wall hangings from falling off the wall. They have found it very difficult to attach student work onto the smooth, painted concrete walls and often find student projects that have fallen off the wall overnight and are laying all over the classroom floor the next day. We suggested two-inch core strips with optional metal hangers that can be purchased as a variety of lengths and attached to walls at any height.

During the heating season, there are certain classrooms that are consistently cold due to inoperable univents, but these problems are much less severe than the warmer months, often being taken care of by the custodial and maintenance staffs.

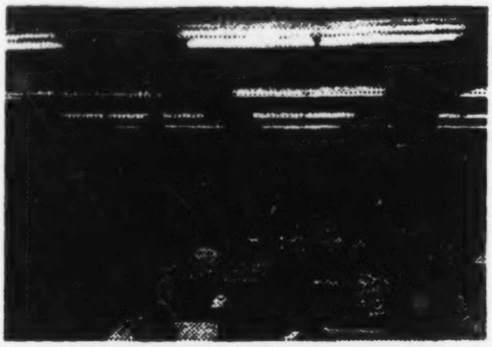
Although many teachers are very satisfied with the work of the custodial staff, a few teachers feel that the level of service is not what it was before the private company appeared on the scene. The debate within the working group centered on expectations. The desire to clarify the needs of teachers with respect to the scope of cleaning services was of moderate concern for the working group. A few teachers felt that in some cases, the cleaning of classrooms was not as satisfactory as in the past; citing the lack of clean of counters. Others disagreed and felt that custodial services have been satisfactory and that cleaning counters was never within the scope of the company's contract. The principal, Ms. Norman, remarked that possibly the recent turnover of custodial staff had made it difficult to develop a long-term working relationship. She felt that possibly the teaching staff had not been specific enough concerning their needs. One teacher indicated that the expectations of many tenured teachers within the school has always been very high as a result of the exquisite work of a certain previous custodian, Mildred D. Monroe!

"She had kept an immaculate building, had shoveled snow, given mittens to children on cold days... she was a fixture in the community and when she died, the community asked that Guilford School be renamed Mildred Monroe in her honor and the school board agreed to it. Her grandchildren are still attending this school, so you have a sense of the importance [of Mildred Monroe] to the community..." [1st Grade Teacher]

Like most schools, the name of the school itself carries a special meaning, in the case of Mildred D. Monroe Elementary School that meaning is a special and important feature for many teachers who remember Ms. Monroe. The school was named after the custodian a dozen years ago when she suddenly and unexpectedly passed away. Ms. Norman explained, Mildred Monroe embodied the ideal of safeguarding and caretaking, she took full custody of the school.

The symbolism of Mildred Monroe as an idealized caretaker is taken very seriously by Bernard, the school's present head custodian or "team leader." He was assigned to the school by Johnson Controls, a private facility management company contracted by Education Alternatives, Inc. (EAI) in 1992 to provide all custodial and maintenance services to the nine schools managed by EAI. Although the contracts with EAI and hence Johnson Controls have expired as of March 1996, Bernard is expected to continue working at Mildred Monroe under the direction of Baltimore City. He takes very seriously his company's motto "to meet and exceed the expectations of the customer," and for him, that means making sure floors are shining, trash is emptied, rugs are vacuumed, and chalktrays are cleaned, making best use of the most innovative products on the market, and engaging in intensive staff training aimed at continuous improvement — he is a true manifestation of the Total Quality Management philosophy espoused by Johnson Controls.

The principal, when asked to evaluate how well she feels the school is doing with respect to environmental quality states, "I think in terms of a clean environment, a sanitary facility, I think we're well above average...we're very good in that area." A teacher from the working group was also insistent about the custodial care explaining, "The floors sparkle...the custodians work very hard [and] meet my needs, they're wonderful. The school is attractive to students and people who come in [and] the staff has done everything they can do to keep it attractive."



Cafeteria can get very loud and chaotic at lunchtime, but during other periods of the day, the cafeteria is a place for several small group instructional areas.

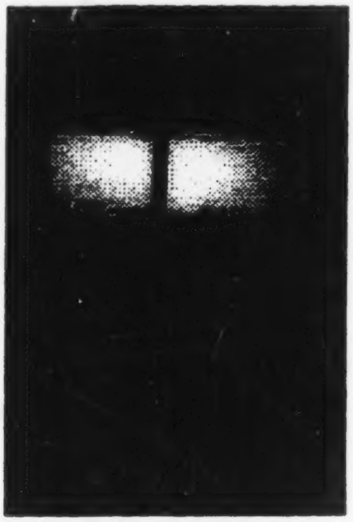
Lunch periods at Mildred Monroe can be very loud and chaotic. Students have been contained in classrooms from 8:20AM until 11:00AM and they are ready to let loose. The noise in the cafeteria is in stark contrast to the relatively quiet corridors and classrooms apparent throughout the morning. While six classes file into the cafeteria, Ms. Norman speaks over the microphone in an effort to "direct traffic" and later, to penalize a class for being to loud and disruptive. It takes nearly fifteen minutes to calm this class down, before they are allowed to get up and receive their lunch.

To be fair to both the excited children and the exasperated principal, the physical features of the school's interior may be contributing to the ear deafening noise. There are extraordinary amounts of hard, smooth surfaces that make up the interior of the buiding: smoothly painted concrete and tile wainscot walls, smooth vinyl asbestos tile, and quite uncommonly painted concrete block ceiling panels.

The cafeteria is not the only space laden with acoustical problems: the bathrooms on both the first and second floor suffer as well. Ms. Norman explains, "The lavatory...because of the size of the room and probably the materials, the noise, the three children in there, if they decide they're going to have a loud conversation, you can hear them." Ms. Green, a fourth and fifth grade teacher who's classroom is directly across the corridor from the second floor bathrooms stated, "The bathroom is poorly treated acoustically. Everything vibrates and goes into my classroom. I can hear kids going in and out of the bathroom all day long." This constant noise can be a distraction for her students, especially in the warmer months when she tries to keep the door open to create cross ventilation to keep the room as cool as possible. Ms. Norman explains another strategy that has been attempted to curb the noise problem: "We've tried to help with some sound deadening with some curtains here and there...we don't have curtains in every classroom and if we had..we'd probably have a lighting problem [laughter]...I guess you...weigh one over the other." The colorful rugs the school obtained through EAI added another element to absorb noise. Addressing the problem of noise in the bathrooms may involve both a management/policy response as well as a physical response. As the principal explains, with five classrooms, each teacher may be sending only two students to the bathroom, and consequently as many as ten students could be occupying the bathroom at any one time.

Noise from the bathroom was given a low priority by the working group, as was noise from within the classroom (which happens to have similar non-obsorbing interior materials), and street noise. Street noise is a problem in the warmer months when the windows are openned. On the Guilford Street side, cars can be heard, but the most distracting noises are often adults walking by the school and yelling obsenities. On the west side of the building, the majority of distracting noise comes from the playground. Neither one of these sources of noise were seen as being that out of the ordinary and therefore were not seen as critical concerns to address.

Another feature of the classrooms that teachers in the working group identified as an important, yet low priority are the unsightly frosted shatter-proof plexiglass windows. The advantage is that people on the first floor cannot see in to the building (in fact, bars have been added to the first floor windows rendering them completely inoperative). The disadvantage is that it is difficult to view out the windows to gauge the weather conditions, daylight that comes through the windows is poor, their are unsightly and they cannot be cleaned without further scratching of the surface. One teacher stated, "Last year we had strong winds outside but no one in the building was aware of it because we couldn't see out."



A typical weather beaten Plexiglas window at Mildred Monroe.

The front exit can get very crowded along Guilford Avenue after school. Later, after most of the students have left the building, a businessman from the across the street comes into the front doors of the school to report to the prinicipal that he caught some students running dangerously across the street. He says with a deep sense of concern, "We need to look out for the children. They may not be mine, but they [are] all our children."

Although new grates installed recently add significantly to the security of the school building, they represent to teachers a sad reminder of the circumstances their students live with.

FINDINGS & DISCUSSION

The previous section describes in some detail the more critical of the twenty-three (23) distinct environmental quality issues of concern at Mildred Monroe identified by the working group (See Appendix B for a complete listing and summary of these issues).

Some of these issues overlap and in some cases, contradict each other. For instance, the desire for natural daylighting, fresh air and outdoor views were often overruled by more critical needs for security from potential intruders, which dictated the placing of metal grates on the now locked first floor windows. To further understand the implications of these issues on the educational process, through the assistance of the working group, issues were categorized by (a) ten attributes of environmental quality, and (b) their potential influence on three broadly defined educational process outcomes; student performance, student social development and teacher instructional performance.

Ten distinguishable attributes of environmental quality have emerged from the intersection of the researchers' findings in Baltimore City Public Schools and what is known from previous research literature. Not only was there a desire to understand the nature of the interaction between the various attributes of environmental quality, but the appraisal of teacher perceptions of the potential influence on the educational process was desired as well. What follows is an analysis of the relationship between these attributes of environmental quality, the issues raised in the working group and their percieved potential impact on the three educational process outcomes.

1. Physical Comfort and Health *refers to the degree to which occupants feel the indoor environment meets their physiological needs with respect to thermal and air quality, illumination, noise and odors.*

- Physical comfort and health was the most frequently referred to attribute of environmental quality. Through interviews and the workshop teachers and parents alike identified concerns such as temperature (#1), acoustics and noise in bathrooms (#13) and daylighting problems with frosted windows (#16).

- By far the highest priority for the working group was the lack of air conditioning during the rising temperatures and humidity of the warmer months of the year (Issue #1). Temperature and humidity problems were seen as potentially affecting student performance, social development and teacher instructional performance. Although there are a few spaces that are air conditioned such as the library and computer rooms, the problem can be of real concern especially during periods when tests are being conducted. Unfortunately, budget considerations have limited the possibility of air conditioning in this building.

- Although acoustics and noise issues were mentioned (#s 13, 14, 15) these issues were perceived as being of low priority and not as much of a concern as other environmental quality issues. It is clear that the school suffers acoustically from many non-acoustical materials on floors, walls and even ceilings (ceilings are painted concrete block rather than the very common acoustical ceiling tile found in most modern school buildings).

- Finally, with reference to physical comfort and health issues, there has been some concern by a few teachers in the working group over the responsibilities of the custodial staff regarding the cleaning of classrooms (#12); specifically the cleaning of counter surfaces within the classroom. It was suggested that this problem might be the result of a turn-over of custodial staff in recent months. A revisiting of custodial responsibilities was suggested by the working group to resolve any continuous or potential problems.

2. Classroom Adaptability *refers to the degree to which occupants feel that the physical classroom space can be adapted to different and desired educational activities and functions.*

- The environmental quality of classroom adaptability was the third, most mentioned quality to be raised by the working group.

- The innovations introduced by EAI into the existing self-contained classrooms were seen as welcome albiet challenging for the teachers with respect to adaptability. All desks were replaced by classroom tables (#6), ironically in many cases, causing problems with the flexiblity of classroom space: desks were seen by some teachers as providing more flexibility than bigger tables which took up the majority of classroom space. Finding a solution to the problem created by introducing tables into the classrooms was seen as a high priority to the working group. The table issue impacted the ability of teachers in some cases to effectively conduct cooperative learning exercises (#22) that at times required free movement which is obviously difficult to do in a room occupied by tables.

- Teachers felt that these problems might affect to some degree student performance as well as social development. The reason is connected with several other qualities of the environment: crowding, the lack of privacy and personalization and ownership all can potentially converge on a student's experience at a group table to potentially affect both a student's performance and his or her social development skills.

- Teachers mentioned wall hanging problems (#11) in warm weather as being one problem that often affected their instructional performance by forcing them to take time out of their planning to rehang visuals, posters and student artwork.

- Inability to conduct interclass projects (#21), or team teaching, could have some impact on students social development (offering opportunities to interact with other students), and also limits the teacher's ability to instruct larger groups. If several classes would need to gather in one place, it could be done quite easily by using the cafeteria or auditorium, but this type of activity occurs only occasionally and is therefore a low priority.

- There was some concern over the installation of the computers in several classrooms (#20) that limited use of valuable bulletin board space. It appeared to the working group that the computers could be organized in such as way to limit the amount of direct wall space they occupied by grouping them back to back.

3. Safety & Security *refers to the degree to which occupants feel the school building contributes to protecting occupants from harm, injury, or undue risk.*

- Safety and security was one of the four most often mentioned environmental quality of the ten investigated and was of constant concern and of highest priority, especially on the school grounds: child safety with vehicular traffic (#5), the disorganization of the area around the Urban Services Dumpster (#2) where trash is not regularly picked up by the city, the city alley to the west of the parking lot (#3), and the low level of safety associated with the playground (#4) comprised the issues discussed.

- Most safety and security issues were not seen as affecting student performance in any way by the working group. Child/vehicular cross traffic (#5) was seen as possibly inhibiting social development on the playground.

- Security concerns over teachers' locked storage (#10) was thought to serve as a distractor of sorts on a teacher's ability to focus on instruction without having to worry about whether his or her personal belonging were secure, however it was considered of moderate priority.

- Unlike other schools in the study, Mildred Monroe was less concerned with threats from intruders (#19) due to the recent installation of a front door buzzer. Intrusions have diminished since the installation.

4. Building Functionality *refers to the degree to which occupants feel the various places within the school building are functionally compatible with the school's educational programs and activities.*

- Due to the flexiblity and availability of space within the school due to lower enrollment, building functionality was not seen as a problem and it was not seen as possibly affecting in any adverse ways any of the three educational outcomes.

- The only issue that arose during the interviews and workshops was the underutilization of the teacher's lounge (#17) which was not seen as a problem for the working group in the final analysis. ADA accessibility issues (#23) were seen as important but of low priority (unless any major building renovations or alternations occur at the school they are not required to comply with the ADA accessibility laws).

5. Aesthetics & Appearance *refers to the degree to which occupants feel the school building is attractive and provoking.*

- Aesthetics and appearance was the second most mentioned environmental quality from participants and the working group believed to potentially influence student and teacher performance and social development.

- Much of the problems with appearance were and are associated with the exterior grounds of the school: the Urban Services dumpster (#2), the city alley in need of repair (#3), and the playground (#4). However, paradoxically these particular issues were not seen by the group as affecting any educational outcomes in the way problems within the building were.

- Within the building, other than the concern over classroom counters (#12), a single carpet problem (#8) and some lingering concerns over insects (#9), teachers are very satisfied with the appearance and cleanliness of the school. Aesthetics and appearance of the building as illustrated by issues #8, #9, #12 were perceived as potentially affect both students' and teachers' attitudes, thereby affecting teacher performance. This paradox could be explained by the fact that students and teachers spend most of their day within the school building and it is here that aesthetics and appearance have their greatest impact on occupants. Teachers give the unsightly windows (#16) as an example of this relationship. The fact that they cannot look out clearly affects their attitudes about their classroom. What is still in question is whether the unsightliness of windows keeps them focused on activities within, possibly improving their performance, or the fact that they cannot take short visual rests from instructional activities to reenergize themselves, thus decreasing their performance.

6. Personalization and Ownership *refers to the degree to which occupants feel the school building offers opportunities to create a personal and self-expressive environment and engender a sense of ownership.*

- Personalization and Ownership issues arise with respect once again to the concern over classroom tables (#6), the lack of personal space for students (#7) and teachers' locked storage (#10). The concensus of the working group was that the lack of personal space students have, due in part to the lack of room at classroom tables, is a cause of many of the distruptive problems in the classroom. Students have few ways to personalize their area, as they may have been able to do when they had their own desk. The teachers try to compensate by placing students' work on the walls of the classroom and in the hallways of the school thereby instilling a sense of personalization and ownership on a larger scale (i.e., "this is my classroom, this is my school").

- In spite of these displays, the hallways, although containing student work and slogans, often posted high above the lockers, is not enough to enliven this more public and visable space. It may be the sheer size of the school in relation to the number of students actually occupying it that prevents the school from seeming active and full of energy since activity is spread out and isolated in individual classrooms.

- Where personalization and ownership qualities are clearly in view, however, is at the main entrance lobby and outside the Parent Academy room. It is here where the life of the school is visually expressed with an abundance slogans on the walls, posters announcing events, flyers littered on waiting tables and a photographic portrait of Mildred Monroe. Although not identified by the working group, this area could be seen as having a positive influence on social development of students.

7. Social Places (Places for Social Interaction) *refers to the degree to which occupants feel that places within the school building provide opportunities for meaningful social exchange and interaction.*

- The most openly social place in the school is clearly the combined adjacent areas of the Parent Academy, the main lobby and the main office. It is this area that provides the school it's liveliness, and a great deal of rich informal social interaction takes place throughout the day.

- Other than the main lobby area and the cafeteria/auditorium, the majority of students and teachers are isolated in self-contained classrooms. Within the classroom, most of the social activity takes place at the classroom tables (#6) which is often more of a hinderance than a help to some teachers in the working group. Again, referring to the interplay of factors contributing to this perception one should point to the age of the student, their close proximity to one another at tables intended for four or six when up to eight might be sharing. As discussed above, issues of privacy, personalization and ownership and crowding play into this concern.

- The playground and the cafeteria are the two locations that students are free to express themselves and let off some energy. Even with teacher concerns over the lack of opportunities for personalizing the playground (#4), students find imaginative ways to make the playground as well as the parking lot in general their own.

- The unused or underutilized Teachers' Lounge (#17) is not seen as a problem for teachers; they have more informal places in their own classrooms where they meet and have lunch.

8. Privacy *refers to the degree to which occupants feel that there are places within the school building which provide opportunities for an individual or a small group to be free from the intrusion of others.*

- The working group was in full agreement that the school does not provide adequate room for privacy for students possibly affecting social development and in some instances student performance. Self-contained classrooms limit the ability of teachers to provide semi-private work areas for students in need of such space (#7). Crowded classroom tables (#6) add to this perception. Often, disruptive students aretaken out of the class and in to a classroom where similar students with similar behavior are placed until then can settle down and be returned to their class.

- Teachers have opportunities for privacy, such as the teachers' lounge, but they are not always used due to the shortage of time. The working group was most concerned about students not having a suitable way of gaining privacy within their classrooms.

This was seen as a high-priority issue, however, they could see no immediate or obvious way to resolve this ubiquitous problem.

9. Sensory Stimulation *refers to the degree to which occupants feel the school building provides a stimulating environment for learning that is safe yet challenging.*

- Like other schools in this study, Mildred Monroe felt they had a good handle on providing the appropriate level of sensory stimulation for their students. The only issue in which sensory stimulation applied was playground safety (#4).

- Previously, during the interview process, teachers indicated that sensory stimulation, although not one of the most important qualities, does potentially contribute to student performance and social development.

- As mentioned above, the sterileness of double loaded corridors on all three levels adds to a sense of low stimulation for an elementary school. This concern, raised by the reseacher, was explained by the teachers within the working group as a temporary condition all schools go through in the first few months of their operation: it takes time for students to generate work and fill the walls with the outcomes of their projects. In fact, the researcher noted this to be the case, when, in his subsequent visits, he observed new and additional visual presentations throughout the school.

10. Crowding/Spaciousness *refers to the degree to which occupants feel the school building cannot adequately accommodate the number of students and teaching staff occupying it.*

- Crowding at Mildred Monroe is not an issue except for the problem associated with table-crowded self-contained classrooms (#6) as was previously mentioned. As teachers explained, children spend much of their evenings at home in crowded conditions, and coming to school and experiencing similar crowded conditions within the classroom is, to these teachers, not fair. Crowding, not unexpectedly, was seen as having an affect on student performance as well as their social devel opment. Paradoxically, Mildred Monroe has many spacious designated rooms that could be taken advantage of more than they already are (additional classrooms, art room, auditorium, cafeteria), yet students spend the majority of their day in classrooms at tables teachers feel are too cramped for them.

CASE STUDY REPORT:

Harriet Tubman Elementary School #138

PROJECT OVERVIEW

This report documents specific environmental quality concerns of one of five elementary schools in the Baltimore City Pubic Schools. This report serves not only as a record of the environmental quality concerns themselves, but also describes the assessment process within which these concerns have arisen.

This section provides an summary of the project objectives, problem and approach, and process and procedures of the Baltimore Environmental Quality Assessment Project.

Objectives

The objectives of the Baltimore Environmental Quality Assessment Project project were to:

- develop an occupant-driven environmental quality assessment process through which environmental quality concerns can be creatively identified, addressed and influenced by school occupants themselves.
- assess environmental quality from the perspective of the experiences of students, teachers, staff, administrators, and parent volunteers in each of five Baltimore City Public Schools that chose to participate in this project;
- understand how environmental quality may or may not contribute to the educational process in each school with respect to Student Academic Performance, Student Social Development, and Teacher Instructional Performance; and,
- understand the role of facility management in maintaining and improving environmental quality.

For Harriet Tubman Elementary School #138, this report documents specific aspects of environmental quality of concern to the school. The assessment process was not conducted to judge the final worth or merit of the school as it relates to environmental quality. Rather, the intent of this project was to provide information useful for improving the environmental qualities of the school, especially those that may have some impact on the effectiveness of the educational process. It is the hope of all involved, that the results of this study be considered an affirmative step toward improving environmental quality at Harriet Tubman.

Each school case study investigation followed a research process in which a selected number of teachers and administrators participated in actively clarifying the scope of the project, identifying and prioritizing environmental quality problems, issues and concerns, and formulating strategies for addressing these concerns.

The report that follows briefly summarizes the project activities and assessment process conducted within a five month period between August, 1995 and December, 1996. Any mention of individual names are fictitious to protect the anonymity of participants in the study.

In August of 1995, Harriet Tubman Elementary School agreed to participate in the Environmental Quality Assessment Project.

During a visit on September 21, 1995, a physical inventory and preliminary walk-through of Harriet Tubman was conducted, along with interviews of the principal and the head custodian.

During a visit on October 24, 1995, a full day of observation was conducted which included behavior mapping, informal and formal interviews with teachers and photographic documentation of the school-in-use. In addition, 45-minute semi-structured interviews were conducted with three classroom teachers and one instructional specialist. Each teacher was asked to fill out a teacher survey-worksheet, as well as to administer a student survey.

Prior to the final visit on February 12, 1996, information gathered from the previous visit was tallied and organized into a series of potential environmental quality issues to be discussed during the workshop. Workshop materials included a list of all issues, floor plans showing the location of issues throughout the building, a presentation board containing photographs of problem areas. Also included were individual issue cards and a blank matrix worksheet for ranking issues by priority (high, moderate, low) and the potential impact, if any, on one of three educational outcomes (student performance, social development, teacher performance). The workshop, with a working group of four teachers and the assistant principal, lasted a total of 90 minutes.

In the following Spring, a teacher survey was administered to gather further information regarding teacher perceptions of environmental quality.

TAKING OWNERSHIP

Harriet Tubman Elementary School #138 is a Pre-K through 5 school, serving 450 students from the neighborhood with a total teaching staff and support staff of 45. The educational program emphasizes cooperative learning and is supported in that effort by the Success For All program run by John Hopkins University. The school practices strategies for age appropriate learning as well as advocating the Dimensions of Learning philosophy.

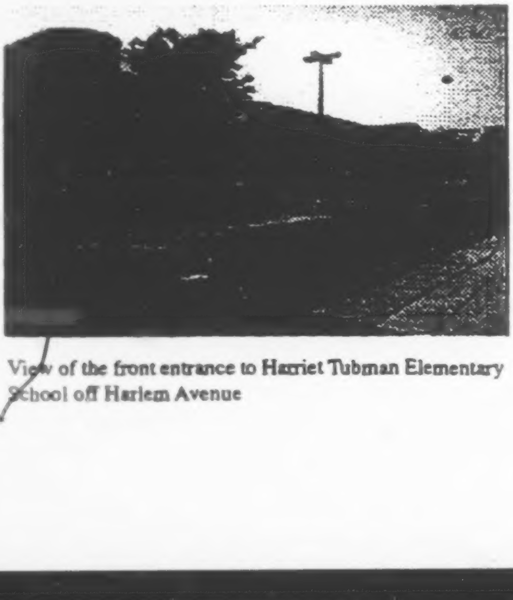
The school is located northeast of the central business district by approximately two miles and serves the Harlem Park Neighborhood a large African American community designated as an Empowerment Zone. Baltimore is only one of four cities to receive the designation by the federal government as an Empowerment Zone which entitles each of these select communities to $100 million in federal grants. Baltimore has identified 112 initiatives intended to transform these neighborhoods.

Harriet Tubman is also part of the Baltimore City's Enterprise Schools Program, one of 34 public elementary, middle and high schools designated to be self-governing in the management of their financial resources, personnel, curriculum, educational policy and facilities. A School Improvement Team (SIT) has been formed in each of these schools to provide policy and management oversight, program assessment and mobilization of the community's participation.

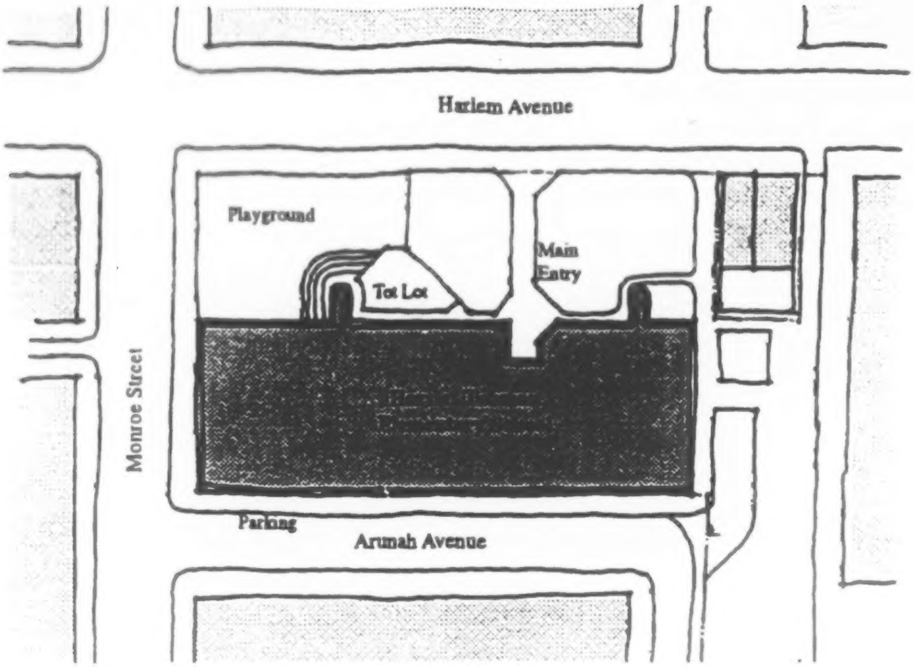
Unfortunately, even with all of the positive support, Harriet Tubman currently finds itself struggling with problems of community and parent involvement, while simultaneously trying to increase already low achievement scores. As of February of 1996, the school, along with 34 other low performing schools, has been threatened by Reconstitution (the take over and restructuring of the school by the State of Maryland).

Overarching this challenge are the social problems in and around the Harlem Park neighborhood which, like many other Baltimore City Public Schools, have gotten worse over the past few years. Although many of these problems, literally outside school doors, have on rare occasions found their way in, the school has successfully maintained a highly-spirited atmosphere, and a positive and safe learning environment for children of the neighborhood.

The two story brick 44,800 square foot building that the school occupies on the corner of Harlem Avenue and Monroe Street is surrounded by early 1900's brick rowhouses, a quarter of them being boarded up and abandoned. Like many Baltimore City neighborhoods, this neighborhood is experiencing increasing mobility rates among its African American population. Many families in this community are in social and economic crisis; it is not uncommon to find grandparents raising their children's children.



View of the front entrance to Harriet Tubman Elementary School off Harlem Avenue



Site Plan

Harriet Tubman, constructed in 1979, replaced the original turn of the century school building (previously called Robert Fulton) located just north on the same site. Many of the teachers from that original school continue to teach at Harriet Tubman. One of these teachers, Ms. Bailard, remembers when the school was first being planned and public hearings were being held: she was involved in the original planning process, and admits she and other teachers did not get all of what they had hoped for, including a recreational center. Ms. Bailard recalls Baltimore City school officials and architects advocating an open plan school which was at the time a very popular concept embraced by school districts around the country. Many of the teachers and some residents within the community lobbied against the open plan concept claiming that open space was not what their children needed; they required a more structured learning environment. According to Ms. Bailard, the group lost the debate due to the lack of community involvement and support; they were unable to sway school officials from their intended plans. This lack of community involvement and ownership in the school continues to this day.

Parental involvement has always been low at the school, although with a new parent liaison, there is some hope; there are as many as eight parents that the parent liaison can rely upon for support. As Ms. Bailard explains, "They just drop off their children and walk away...they won't get involved."

Another area still being explored by the principal, Ms. Kavelaris, is the shared use of the school's facilities with the community. The school recently contracted with TLC Daycare to lease gymnasium space, in order to provide after-school daycare for neighborhood families. Unfortunately for the school, the daycare provider leaves their furnishings, materials and supplies in the gymnasium when they are not there causing problems for teachers wanting to use the gym for recess. What started as good intentions, providing desperately needed services to the community, has caused unanticipated space use problems and contractual problems between the school, Baltimore City and TLC.

Although there are many factors at play contributing to the overall quality of the educational process at Harriet Tubman, gaining the support of the neighborhood community is a challenge Harriet Tubman does see itself capable of meeting.

"We had a couple of trees planted in the front yard area for a teacher that passed away, and the kids tried to take care if it...but, others would hang on the trees and break the limbs and now one tree looks like a twig...a stump in the ground that's all it is." [Teacher, Harriet Tubman]

The condition of the school grounds is yet another element illustrating a lack of community ownership in the school. Despite the custodian's efforts, the building grounds are in terrible shape. Grass has been fenced in to protect it, but this strategy has not worked. The center of the fenced in area has been worn down to dirt, and is used as a large garbage can for the neighborhood residents within which to throw broken bottles, cans, used paper products, bits of clothing, gang graffiti and sometimes drug paraphernalia. Glass from broken bottles have over the years, become imbedded in the ground. In addition, the trash is not regularly picked up by Baltimore City contributing to the problems with school appearance. The fencing is literally falling apart as students play on it, damaging it even further. Requests to have the fencing repaired have been submitted for some time.

The playground in front of the school contains a basketball court used by neighborhood adults for recreational games which consequently sets the stage for open-air drug dealing across the street at a corner bar. One teacher comments, "Sometimes it looks like they had a war with soda bottles, you know...on the weekend you come back, there's soda bottles, beer bottles, there's a very strong smell of urine right near the side stairwells...they write all over the walls...horrible things they put on walls, pictures of things that shouldn't be put on walls." For example, the tall and prominent orange-painted metal stair towers, one located directly near the basketball court, are frequent recipients of graffiti as well.

View of front playground area with residential neighborhood in background.

As Mr. Hall, a teacher participating in the working group summarizes, "The school is used by the community, and even though they consider it their school too, they don't take care of it." Mr. Crawford, the head custodian, recognizing the state of the building grounds states, "We go out everyday to contain that...its very hard, very hard." One teacher, defending the custodian, explains, "I used to have a group of kids that would come out and clean up two or three days of the week. We'd go out in the morning just to help the custodians who couldn't do all of this". The principal, Ms. Kavelaris, adds, "I would like to see the outside environment be more attractive," but admits the problem may be due in part to the structure of their custodial contracts which require custodians to work at more than one school as well as some recent budgetary cuts and changes in responsibilities between Baltimore City and Enterprise schools. Nevertheless some teachers feel there are plenty of people to do this work now, and as one teacher claims, "Our grounds should be kept better than they are."

Children play on damaged fencing outside the main entrance to the school

Ms. Kavelaris mentions that she deals with facility management issues, ". . . more than I want. I don't want to talk about panic bars, to me that's not exciting, but I know its in my purview. But, I'd like it to be dealt with and be gone so that our focus can be just on academics. So, I'm not happy when I have to make a case about something we expect to be working and its not working." She estimates that her attention to facility management issues may account for as much as 10 to 15% of her workload as principal.

Again, like many Baltimore City Schools there is a lack of adequate playground equipment. As Ms. Kavelaris remarks, "We are hopeful that at some point we realize a playground; that is a major focus and concern of ours; that we don't have adequate outdoor play equipment." Mr. Hall, a classroom teacher adds, "The playground needs to be resurfaced for young kids to cushion their fall; they need some thing out there besides that jungle gym...I hate that thing." Current estimates for a new playground are running into the thousands of dollars, much more than the school can afford with its present budget.

Children play on outdated and unsafe playground equipment.

"A lot of children know what's happening in this neighborhood...if you get them to write, some of our children [will say they] are afraid of being shot, or being hurt in their neighborhood and that's something to think about, you know, children should feel safe if they are playing outside in their neighborhood or whatever, but our children don't, they know what's happening." [Parent Volunteer, Harriet Tubman]

Harriet Tubman, while trying to conduct the business of learning has had to patiently weather a series of recent incidents around their school. In one particular situation in the Fall, police, using the second floor teacher's lounge, staked out and successfully caught an open-air drug dealing operation across the street — the results of which were aired on local television.

Not more than a week before the workshop, a tragedy occurred directly adjacent to the school grounds, claiming the life of one child. As one parent volunteer explained, "From what I heard, mom and friend was in there smoking crack — the little boy did not start the fire — mom and friend were doing crack and it must of gotten out of control or something... the precious little baby was not saved." The house, located only feet from the school grounds was under suspicion for drug dealing.

The quality of the neighborhood is an environmental factor that is constantly challenging Harriet Tubman to come up with new strategies. Despite these challenges, the principal, Ms. Kavelaris, states that "within and around the school, we consider ourselves very safe," and insists that the climate or "tenor of the building" is positive, that students want to be there, that teachers are able to "execute their skills," that the building is clean and lacks infestation and that they have many social programs such as conflict and peer mediation that help alleviate the problems that do manage to get into the school. Many of the teachers have a similar opinion. As Ms. Kavelaris muses, "I'm never satisfied, but try to celebrate the small successes we do have."

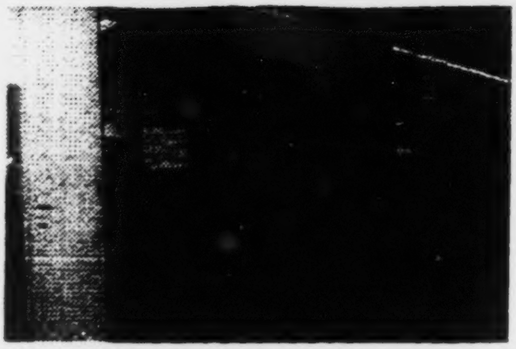
Prior to the school opening, children arrive at the school site and begin running on the playground, climbing the old steel jungle gym, and climbing on the metal play sculptures located within the fenced in grassy area of the school grounds. Gradually, parents with younger children arrive at the school doors as they open promptly at 8:00 AM for breakfast.

Students enter the main entrance off Harlem Avenue directly into the small lobby that acts as a public zone leading only a few feet to the left to the cafeteria and directly ahead to the glass enclosed main office. To the right are double doors leading to the first floor instructional areas and the main stairs to the second floor. This main entrance lobby can get quite busy in the morning.

Beyond the concerns over the building grounds, several places exist within Harriet Tubman that succeed in creating a characteristically comfortable and inviting atmosphere.

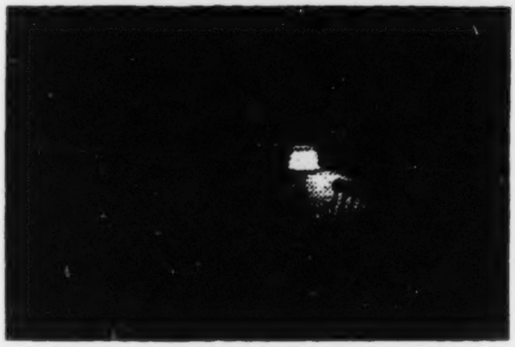
As was mentioned earlier, the vestibule, main lobby and office areas offer a rich and inviting communal feel as people come and go even though it is a fairly restricted space.

From the main office, staff can see directly to the outside spotting arriving visitors. The presence of chairs in the small vestibule, not more than ten feet square, extends the welcoming feeling right to the front doors of the school. Often parents and grandparents will wait in the vestibule for their children, nodding to other visitors as they pass.



View looking from Lobby back toward the entrance vestibule. Chairs and tables, displays and announcements line the vestibule making it an inviting place to enter.

Directly off the main lobby is the main stair leading up to the second floor instructional area. At the foot of the stairs is a small, yet inviting place called the Volunteer Listeners corner for parent volunteers to read to small groups of one or two children. The carpeted area contains two deck chairs, a rocking chair, a small table with a lamp, various framed wall hangings and a children's book storage rack presumably borrowed from the library. In effect, this place acts as a small reading nook. During the Christmas season when it is too cold in the main stair, the school Christmas tree is placed here to be viewed by all that walk up and down the stairs during the holiday season.



The makeshift Volunteer Listeners corner provides an example of making use of a commonly wasted space.

Finally, the library, located at the top of the main stair, acts as a buffer between Pods B and C, creating an island of calm amidst the active classrooms to the east and west. In essence, the library is like the big living room of the school, with a big TV screen and VCR located just to the right of the librarians desk. There is also room in front of the TV for as many as two classes at anyone time.

After breakfast, students and others just arriving begin to flow into their respective instructional areas. Parents escort their children directly from the main lobby into the first floor self-contained Kindergarten classes, while older students begin to form lines to walk up to their second floor instructional areas and classes. It can get rather crowded in the main lobby and main stair leading up to Pods B and C, but teachers and students have learned the routine and everyone efficiently moves to their respective places to get ready for a day of learning and teaching.

The school is organized into both self-contained classrooms and open space instructional areas. The first floor, containing approximately 12,000 square feet, includes three self-contained kindergarten classrooms each of which is 1,200 square feet, a self-contained Music Room, and a single open space pod (Pod A) containing four instructional areas of approximately 26,000 square feet occupied by 2nd and 3rd Grade classes. The remainder of the first floor is devoted to the administrative office wing and the cafeteria, kitchen, and mechanical spaces.

On the second floor, a central corridor cleanly divides self-contained classrooms from open instructional areas. A large media center, positioned in three successive structural bays, is located directly off the main stair and is centralized in plan, effectively separating the two main open space Pods (Pods B and C), each containing four classes: Pod B containing 1st and 2nd Grade students, and Pod C containing 4th and 5th Grade students. Various self-enclosed support spaces adjacent to these Pods serve as supplemental classrooms for special small group or one-on-one instruction. There are a total of four self-contained classrooms, one for each 3rd, 4th and 5th Grades, one for DEC students), and one computer room. In addition, a faculty lounge and other supplemental staff offices are located adjacent to these self-contained classrooms.

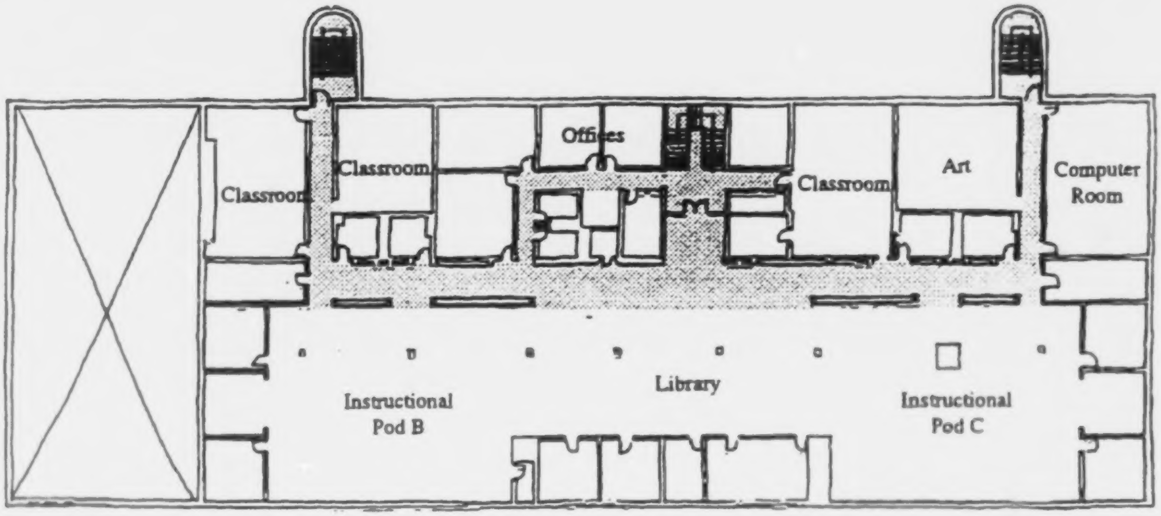
WELCOME TO PODS

At the top of the main stair, a welcome mat and signage make you feel you have arrived somewhere special.

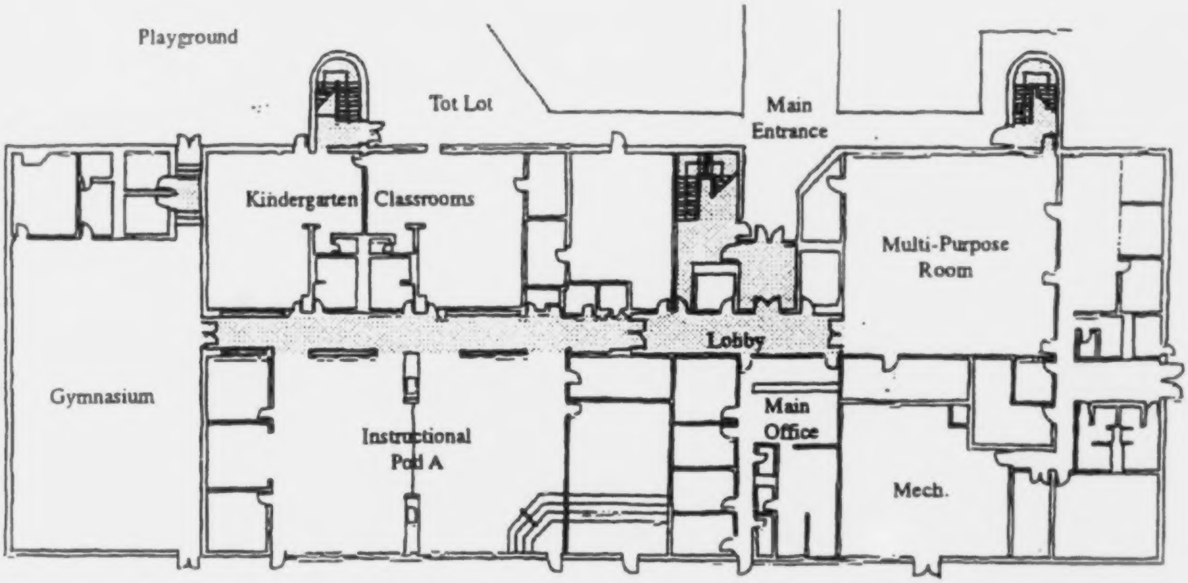
Currently, there are no standards for the size of academic learning areas which vary from state to state. However, one organization has begun to rethink the sizes of educational spaces. In their Guide for School Facility Appraisal, the Council for Educational Facility Planners International (CEFPI) state, "New forms of instruction require greater amounts of space than in the past. Special education, remedial classes, cooperative learning, and community participation all create spatial requirements that differ from earlier periods of education." CEFPI recommends the following: The "building capacity" of an elementary school (the number of students capable of occupying a school facility) can be measured by taking the total gross square feet of the facility and dividing by 90 GSF/student (90 GSF being a CEFPI recommended number). The recommended gross square footage per student for kindergarten and pre-kindergarten classes are: minimal 30-35 GSF/student, acceptable 36-40 GSF/student, ideal 40-48 GSF/student. The recommended gross square footage per student for elementary classes: minimal 23-27 GSF/student, acceptable 28-30 GSF/student, ideal 31-36 GSF/student.

Taking these standards as a means of assessing the conditions at Harriet Tubman, the school building is below its capacity of 498 students at 420 students (at the time of the assessment). Pre-kindergarten and Kindergarten classrooms are 'ideal' at 45 gross square feet per student. While, the First through Fifth Grade classrooms are 'acceptable' at 29 gross square feet per student.

The Library/Media Center effectively divides Open Space Instructional Pods on the second floor


Offices
Classroom
Classroom
Classroom
Art
Computer Room
Library
Instructional Pod B
Instructional Pod C

Second Floor Plan


Playground
Tot Lot
Main Entrance
Kindergarten Classrooms
Multi-Purpose Room
Lobby
Gymnasium
Instructional Pod A
Main Office
Mech.

First Floor Plan

At Harriet Tubman, hall passes are routinely used and if teachers do not recognize a visitor they look immediately for evidence of the pass. They have good reason to be especially strict about this pass policy. Over the last few years, intruders, often disguised as visitors were responsible for a number of thefts, including pocket books and purses from teachers' classrooms, computers, and a VCR and microwave from the teachers lounge. It was discovered that often, many intruders would enter the stair towers, identify an item they wanted, then, as one teacher states, "They knock us down, taking things out of here," often right through the front door. With a change in policy, having the egress doors locked when the school is not in session as well as providing a buzzer on the front door, the problems have decreased substantially. No one from the working group knew of any incidents since the new policy has been implemented. In addition, during dismissal, students on the second floor are all dismissed via the central stairs in shifts, since it was not uncommon to find students from different schools sneaking into the building. To cut down on the possibility of this problem, only students on the first floor are exited out the stair towers before they are locked. This does result however, in substantial congestioin at the main stair in the morning and at dismissal, even with the shifts.

Once students get settled into their respective classrooms, things begin to quiet down as they get to work on various projects at their table groups. Classrooms on both the first and second floor are very colorful and bright. Every available surface is covered with student work and other instructional displays. Where a teacher does not have sufficient wall space, they will hang student work and other instructional displays from the acoustical tile ceiling, creating yet another visual, if not chaotic-looking barrier from other neighboring classes. Architecturally, columns and sink counters visually divide instructional spaces into well-defined areas. Bulletin boards are used to delineate boundaries between classes. In most classes, desks are arranged in table groupings of four, one physical indicator of a cooperative learning instructional strategy. Many teachers work with their students in small groups in one corner of the instructional area.

One of the highest priority issues identified by teachers were problems with open space. Although most admitted that open space promotes collegiality among teachers, noise and distraction continue, even with the recent purchase of new portable bulletin boards. A previous principal had enforced a strict policy of openness and would not allow any partitions or dividers at all; they are now all very appreciative of the efforts of the present principal to address their concerns over open space.

Pod C, where Mr. Hall is located, has not yet gotten the new bulletin boards. As he explains, "You can see all the way from one end to the other in this school and the kids are easily distracted by activities going on in the classroom right next to you." Several teachers, attempting to solve this problem often use auxiliary spaces, such as art or music or the cafeteria for louder activities.

An additional problem of the open space plan is that there is no wall space for teachers to display materials and student work. Several teachers also complain that there is an inadequate amount of chalkboard space as well as no locked cabinet storage in the classroom itself for classroom materials or personal belongings.

Adding to the instructional concerns is the loss of one teacher position last year, leaving no one to manage the computers located off each Pod in the second floor. To resolve this issue, the principal has discussed the possibility of distributing the twelve computers directly into the classrooms.

The teacher position was eliminated due to changes in enrollment, and although Harriet Tubman lost a computer manager, they gained the instructional space in Pod B on the second floor. However, this space has been haphazardly taken over by Ms. Alton as a small group instructional area and not used as effectively as it might be. Where one might expect to find activity centers and other small well-defined instructional spaces, the space is instead occupied by a few desks and various classroom materials stored in boxes and on shelves, and was observed to be rarely used. It may be possible, as Ms. Alton suggested, to find a way to more effectively share this additional space with teachers from the other two instructional areas.

Generally, there were no concerns with self-contained classrooms. However, one self-contained kindergarten classroom teacher has experienced some problems. Ms. Zebel's class of 25 students occupies a classroom of 864 square feet that contains a stepped platform occupying a third of the room making table layouts awkward. What makes the platform area unusable is its narrow width, 5 feet, not enough for small group activities. The space on the steps acts as a storage area for materials and supplies in what could be described as organized clutter. In addition to the tightness of desks, there is not room for a dedicated gathering space in the area that remains.

Due to a lack of wall space, teachers use any means necessary to display student work and other visuals including hanging posters from the ceiling.

" It was cold enough to wear gloves...a couple of children had gloves on, and I told them to please take them off because you won't be able to do your work. . .when you're cold, what do you do, or what do you want to do?" [Third Grade Teacher]

An open space instructional area that has inefficiently captured a temporarily abandoned space.

The most often discussed environmental quality of concern for the working group at Harriet Tubman was the constant problems with the thermal environment. Parts of the building have continual problems with heating in the winter, while other parts of the building suffer from being too cold in the spring and fall months. One teacher from the working group describes how thermal comfort affects her students, "Sometimes when its too cold in here, children will shiver, be restless and will not be listening." Just the opposite has been experienced when it becomes warm in parts of the building. As another teacher describes "The children will start slouching, and just won't pay attention." One teacher speaking for the working group stated, "This is our No.1 concern."

One self-contained classroom is tight due to the design of a platform that takes away room that would otherwise be used for small group instruction.

Air circulation and dry air are also a common complaint with teachers. One of the teachers in the working group claimed to have, in the past, experienced throat problems; she was getting horse and went to her doctor who asked immediately about the environmental conditions at her school. Teachers strongly suspect that the mechanical system is a major factor affecting the health of all occupants in the school.

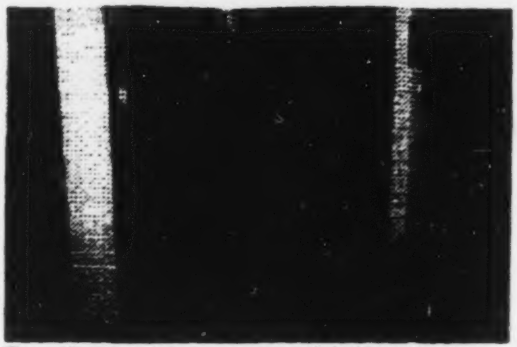
Associated with the lack of control teachers feel over their thermal comfort is their inability to get fresh air flow. This concern has created problems with poorly ventilated bathrooms, and stale and dry air. The principal has installed vanilla-scented air fresheners that do help, but are only a quick fix for the real problem of inadequate indoor air quality that remains to be addressed.

"I wanted to do a science experiment with seeds, but I couldn't get anything to grow since the daylight is so poor coming through the Plexiglas windows so I had to go out and buy a grow lamp." [Second Grade Teacher]

The custodian is keenly aware of thermal comfort problems and tries to alleviate them for the teachers however he can. When it gets warm, the custodian will unlock the windows to get some relief to a localized part of the building. Even when the custodian opens a window, one teacher located further in the interior of the building remarks, "If there is a nice breeze coming through the window I can't feel it."

Unfortunately, the windows are typically locked and even daylight coming through the windows is defuse and unsatisfying to teachers, not just aesthetically, but educationally as well. In the case of the failed science experiment, the teacher was additionally frustrated by the fact that there was no place on the window sill wide enough to put the plants.

Dismissal creates a frantic rush for the exits, but here again, the orderly procedures of the school prevail. Student classes are escorted to the three primary exits, the main stair and exit and the two stair towers. All students on the first floor exit through the stair towers, while all students on the second floor exit via the main stair in shifts.



The main exit stair can get congested during the beginning and end of the school day.

Students rush to the same playground areas at the end of the day as at the beginning, playing not only on the aging jungle gym, but also climbing in groups onto the sculpture, running around on the basketball court, swinging from the fence frames and sitting on the deformed fencing itself. Ironically, after all the concerns teachers have for the children, in the minds of the children, this is a great place; this is their school, their neighborhood.

FINDINGS & DISCUSSION

The previous section describes in some detail the more critical of the twelve (12) distinct environmental quality issues of concern at Harriet Tubman Elementary School identified by the working group (See Appendix A for a complete listing and summary of these issues).

Some of these issues overlap and in some cases, contradict each other. For instance, the desire for natural daylighting, fresh air and outdoor views were often overruled by more critical needs for security from potential intruders, which dictated the locking of first floor windows. To further understand the implications of these issues on the educational process, through the assistance of the working group, issues were categorized by (a) ten attributes of environmental quality, and (b) their potential influence on three broadly defined educational process outcomes: student performance, student social development and teacher instructional performance.

Ten distinguishable attributes of environmental quality have emerged from the intersection of the researchers' findings in Baltimore City Public Schools and what is known from previous research literature. Not only was there a desire to understand the nature of the interaction between the various attributes of environmental quality, but the appraisal of teacher perceptions of the potential influence on the educational process was desired as well. What follows is an analysis of the relationship between these attributes of environmental quality, the issues raised in the working group and their perceived potential impact on the three educational process outcomes.

1. Physical Comfort and Health *refers to the degree to which occupants feel the indoor environment meets your physiological needs with respect to thermal and air quality, illumination, noise and odors.*

- Physical comfort and health was another environmental quality mentioned frequently by the working group as affecting student performance, social development and teacher performance in the case of the high priority issue Too Hot, Too Cold (#8).

- Dissatisfaction with Open Space (#1), a high priority issue, also illustrates a physical comfort and health quality in that visual and acoustic distractions were seen as affecting students' and teachers' ability to concentrate on their tasks potentially influencing student performance and well as teacher performance.

- Bathroom Ventilation (#10) although a problem, was identified as a moderate priority that did not affect any of the three educational outcomes under investigation.

2. Classroom Adaptability *refers to the degree to which occupants feel that the physical classroom space can be adapted to different and desired educational activities and functions.*

- Classroom adaptability was the second most mentioned environmental quality of the ten as described by the high priority issues of Dissatisfaction with Open Space (#1), Inefficient Self-contained Classroom (#2), a moderate priority issue of Non-use of Computer Nooks (#9), and a low priority issue of Inefficient Use of Open Space (#11).

- Classroom adaptability was seen as potentially related to student performance through evidence of Dissatisfaction with Open Space (#1), Non-use of Computer Nooks (#9), and Inefficient Use of Open Space (#11).

- Finally, classroom adaptability was identified by the working group as potentially affecting teacher performance as demonstrated by the issues of Dissatisfaction with Open Space (#1), Inefficient Self-contained Classroom (#2), and Non-use of Computer Nooks (#9).

3. Safety & Security *refers to the degree to which occupants feel the school building contributes to protecting occupants from harm, injury, or undue risk.*

- Safety and security issues were one of the most often mentioned environmental qualities for the working group. All five environmental quality issues — Congested Stair/Main Lobby (#3), Lack of Playground Equipment (#4), Lack of Adequate Tot Lot Area (#5), Upkeep of Grounds (#6), Psychological Safety on Building Grounds (#7) — were of high priority for teachers.

- The safety and security issue of Psychological Safety on Building Grounds (#7) was identified as potentially affecting student performance, social development and teacher performance in that experiences brought into school by students and teachers could adversely affect their ability to focus on the tasks of learning and teaching.

- The safety and security issues of Lack of Playground Equipment (#4) and Lack of Adequate Tot Lot Area (#5) were both seen as limiting opportunities for student social development.

- The environmental issues of Upkeep of Grounds (#6) and Congested Stair/Main Lobby (#3) were seen by the working group as concerns not directly related to any of the three educational outcomes.

4. Building Functionality *refers to the degree to which occupants feel the various places within the school building are functionally compatible with your school's educational programs and activities.*

- As building functionality issues, Lack of Playground Equipment (#4) and Lack of Adequate Tot Lot Area (#5), both high priority issues, were perceived as having a potential to influence social development.

- Both building functionality issues, Congested Stair/Main Lobby (#3) and ADA Accessibility (#12) were not seen as having any particular influence on the three educational outcomes.

5. Aesthetics & Appearance *refers to the degree to which occupants feel the school building is attractive and provoking.*

- The environmental quality issues of Upkeep of Grounds (#6) and Lack of Playground Equipment (#4) were both seen as issues of poor aesthetics and appearance. In the case of Lack of Playground Equipment (#4), the working group saw this environmental quality associated with social development.

6. Personalization and Ownership *refers to the degree to which occupants feel the school building offers opportunities to create a personal and self-expressive environment and engender a sense of ownership.*

- Upkeep of Grounds (#6) was the central environmental quality issue around which most discussion of personalization and ownership qualities of the school revolved. The working group concluded that many members of the surrounding community have not taken ownership of the school grounds.

- Within the school, teachers provide many opportunities for students to personalize their classrooms by displaying student work, and to take ownership of their school through sharing in classroom clean-up routines.

7. Social Places (Places for Social Interaction) *refers to the degree to which occupants feel that places within the school building provide opportunities for meaningful social exchange and interaction.*

- The only issue attributable to the quality of social places identified by the working group was the Inefficient Self-contained Classroom (#2). The design of the stair steps across the back of the classroom limits available room for accommodating both classroom tables and a small group instructional floor area. A key feature of the kindergarten classroom, a floor area able to accommodate the full class has been compromised. This lack of small group floor space has hindered the teacher from conducting certain instructional activities.

- Although not mentioned by the working group, the main lobby and administrative office area was found to be one of the more successful social places within the school. This area encourages a great deal of informal social exchange between teachers and staff, parents, students and community. Much of the success of this series of spaces are made possible by their close proximity to one another, and their relatively high trafficked density. Although at times this area would get quite congested and was an issue of concern, it still provided one of the more successful social places in the school.

8. Privacy *refers to the degree to which occupants feel that there are places within the school building which provide opportunities for an individual or a small group to be free from the intrusion of others.*

- The issue of privacy was not of main concern to the working group. The working group felt that even thought students did not have many opportunities for privacy, if it was really needed, in the case of social conflicts, they could be sent to a supplemental staff member's room, or simply be removed from the larger group for a few minutes.

9. Sensory Stimulation *refers to the degree to which occupants feel the school building provides a stimulating environment for learning that is safe yet challenging.*

- The working group was satisfied with the quality of sensory stimulation in their school and saw it as potentially supporting student performance and social development.

10. Crowding/Spaciousness *refers to the degree to which occupants feel the school building cannot adequately accommodate the number of students and teaching staff occupying it.*

- One factor within the school contributing to a sense of spaciousness is the layout of the second floor with the media center acting as a buffer between Pods. Within instructional areas in the Pods, class densities for Grades 1-5 averaged over 30 square/feet per student.

CASE STUDY REPORT:

Robert W. Coleman Elementary School #142

PROJECT OVERVIEW

This report documents specific environmental quality concerns of one of five elementary schools in the Baltimore City Pubic Schools. This report serves not only as a record of the environmental quality concerns themselves, but also describes the assessment process within which these concerns have arisen.

This section provides an summary of the project objectives, problem and approach, and process and procedures of the Baltimore Environmental Quality Assessment Project.

Objectives

The objectives of the Baltimore Environmental Quality Assessment Project project were to:

- develop an occupant-driven environmental quality assessment process through which environmental quality concerns can be creatively identified, addressed and influenced by school occupants themselves.
- assess environmental quality from the perspective of the experiences of students, teachers, staff, administrators, and parent volunteers in each of five Baltimore City Public Schools that chose to participate in this project;
- understand how environmental quality may or may not contribute to the educational process in each school with respect to Student Academic Performance, Student Social Development, and Teacher Instructional Performance; and,
- understand the role of facility management in maintaining and improving environmental quality.

For Robert W. Coleman Elementary School #142, this report documents specific aspects of environmental quality of concern to the school. The assessment process was not conducted to judge the final worth or merit of the school as it relates to environmental quality. Rather, the intent of this project was to provide information useful for improving the environmental qualities of the school, especially those that may have some impact on the effectiveness of the educational process. It is the hope of all involved, that the results of this study be considered an affirmative step toward improving environmental quality at Robert Coleman.

Each school case study investigation followed a research process in which a selected number of teachers and administrators participated in actively clarifying the scope of the project, identifying and prioritizing environmental quality problems, issues and concerns, and formulating strategies for addressing these concerns.

The report that follows briefly summarizes the project activities and assessment process conducted within a seven month period between August, 1995 and February, 1996. Any mention of individual names are fictitious to protect the anonymity of participants in the study.

In November of 1994, Robert Coleman Elementary School was the first school to agree to participate in the Environmental Quality Assessment Project.

During the first visit on July 28, 1995, a physical inventory and preliminary walk-through of Robert Coleman was conducted, along with interviews of the principal and the head custodian.

During the second visit on September 18, 1995, a full day of observation was conducted which included behavior mapping, informal and formal interviews with teachers and photographic documentation of the school-in-use. In addition, 45-minute semi-structured interviews were conducted with three classroom teachers and one instructional specialist. Each teacher was asked to fill out a teacher survey-worksheet, as well as to administer a student survey.

Prior to the third visit on October 25, 1995, information gathered from the previous visit was tallied and organized into a series of potential environmental quality issues to be discussed during the workshop. Workshop materials included a list of all issues, floor plans showing the location of issues throughout the building, and a presentation board containing photographs of problem areas. Also included were individual issue cards and a blank matrix worksheet for ranking issues by priority (high, moderate, low, none) and the potential impact, if any, on one of three educational outcomes (student performance, social development, teacher performance). The workshop, with a working group of four teachers and the assistant principal, lasted a total of 90 minutes.

A second workshop was conducted on December 13, 1995 with the same working group to complete work began in the first workshop. During this workshop, the group began to consider options for re-designing the layout of their open instructional areas. In addition, a teacher survey was administered to gather further information regarding teacher perceptions of environmental quality.

On February 13, 1996, a final workshop, a planning and design workshop, was conducted with the School Improvement Team in which design options for new open plan configurations generated between visits were discussed.

THE DILEMMA

Robert W. Coleman Elementary School could be described as a progressive-minded school facing difficult but not insurmountable obstacles enroute to their bold vision of the future. Robert Coleman, under the leadership of its principal are in the process of implementing a vision of a community school that offers a one-stop shop interagency environment, one that reaches out to form partnerships with the community in order to more comprehensively serve the families within the community. The vision includes medical and dental care, religious services, family counciling, GED, and other programs. In essence, the school intends to become a complete community resource center.

As a first step Coleman, over the past year, implemented the Year-Round Education (YRE) Program, the first year-round school in the State of Maryland. YRE Program alternates on a 45/15 day cycle (effectively extending the school year by twenty days) of intersessions with the goal of "enhancing instructional delivery" by "offering curriculum and family options that more closely fit the changing work patterns and lifestyles" of the commuity (Taken from Robert Coleman Elementary School Student-Parent Handbook, p.2). The School Improvement Team (SIT) recommended the implementation of this program based on research evidence that year-round schooling improves attendance, decreases discipline problems, reduces vandalism costs and reduces the likelihood of teacher burn-out. As part of the YRE Program, the Intersession School Program augments traditional classroom instruction by offering additional remediation and enrichment course instruction during intercession in all academic subjects based on a format of cooperative learning, peer tutoring and multi-age grouping. Nearly two hundred students are served during the five ten-day intersession periods held throughout the academic year.

Other activities and programs currently offered as a support an extension of traditional instruction include the contracting of Sylvan Learning Centers which works with at-risk students, a Parent Academy that provides parenting and nutrition workshops, and a YMCA day-care program.

Obstacles to this vision are many, but are being addressed by staff. During interviews and workshops conducted for this study, the vision was found to be at odds with the realities of the physical facilities within which the programs are contained. The inefficiencies prevalent in these facilities has been born in part from a kind of "program-creep" created from interagency partnerships. The location of the Sylvan Learning Center is a self-contained classroom in the center of the second floor open space, and the assignment of self-contained classrooms to the YMCA and the Parent Academy serve as examples of this program creep in which prime instructional space has been allocated to accommodate the community school effort without any thought given to the implications imposed upon the instructional program. As a result, what is left is accreted and unworkable open plan instructional spaces that do not meet the instructional needs of students or teachers. Identifying specific problems and formulating strategies to successfully accomplish the vision within the realms of the existing building structure has become a major focus of this study.

Unfortunately, Coleman currently finds itself struggling to implement their vision, while simultaneously trying to increase already low achievement scores. As of February of 1996, the school, along with 34 other low performing schools, has been threatened by Reconstitition (the take over and restructuring of the school by the State of Maryland). This study serves to support the efforts of Robert Coleman to formulate an Action Plan that includes the critical role of physical facilities in supporting the educational goals of the school. There is a strong perception among teachers, administrators and staff at Robert Coleman that environmental quality has an impact on the ability of students to learn and teachers to teach.

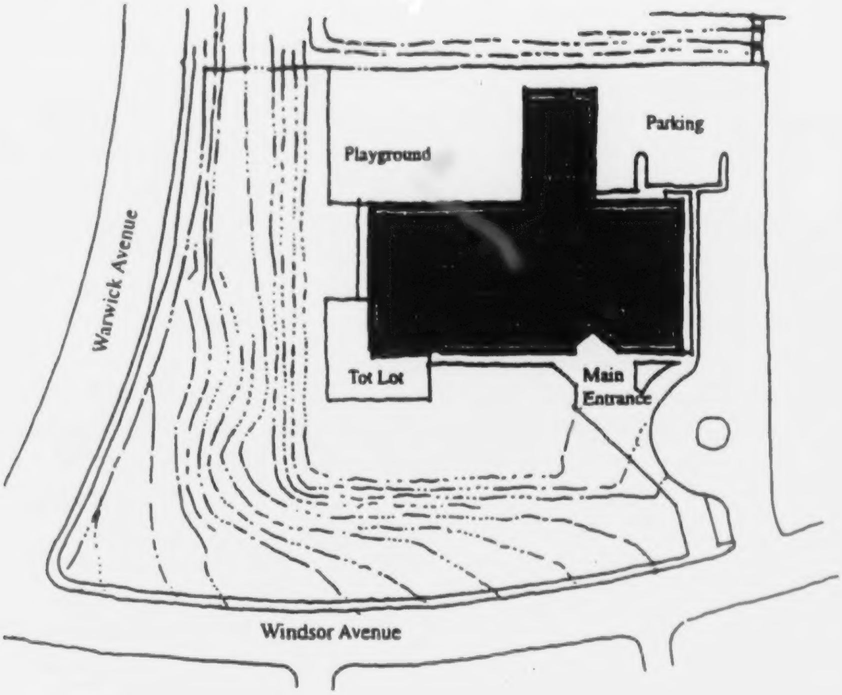
The environmental quality concerns of Robert Coleman come under the perview of Goal 2 of their 3-Year Strategic Plan which states: "To create and implement a design for optimal student learning in a safe, well-organized environment by providing greater flexibility and opportunities for innovative approaches and technological advances in the curriculum to meet individual students' needs." These same teachers and administrators firmly believe that addressing the environmental quality concerns of Robert Coleman will go along way to improving student performance, Goal 1 of the five goals of the school.

The Neighborhood

Robert W. Coleman Elementary School is located in the Greater Mondawmin Neighborhood a large African American community of long-term homeowners and one of the neighborhoods designated as an Empowerment Zone. Baltimore is only one of four cities to receive the designation as an Empowerment Zone by the federal government which entitles each of these select communities to $100 million in federal grants. Baltimore has identified 112 initiatives intended to transform their neighborhoods. The Enterprise Schools Program, for instance, includes Robert Coleman as one of 34 public elementary, middle and high schools designated by the program to be self-governing in the management of their financial resources, personnel, curriculum, educational policy and facilities. A School Improvement Team (SIT) has been formed in each of these schools to provide policy and management oversight, program assessment and mobilization of the community's participation.

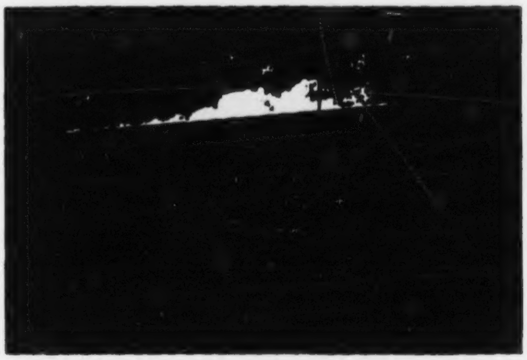
The site on which Coleman sits is bounded by Coppin State College campus located only a few blocks southeast of the school, Mondawmin Shopping Mall to the North, Route 1 a few blocks east (Monroe one-way south and Fulton one-way north) and North Avenue a few blocks south. Coleman shares a smaller southern section of a larger site that includes Douglas High School and its football field and looks across Windsor Avenue to well-landscaped single-family red brick row houses built in the 1930s.

To the west, is a steep grade drop-off and a view of more recent blocks of apartment housing on Warwick Avenue. Coleman is set back from Windsor Avenue 160 feet and allows for a circular drop off access providing a level of safety from the street, a feature nonexistent in many central city schools. The parking wraps around the east side of the building and continues to the north along the gymnasium. A less-utilized paved area continues along the entire north end of the building.



Site Plan

The school itself was named after Robert Coleman, a successful black businessman from the neighborhood who overcame his physical handicap of blindness. The brown brick, two story steel frame and masonry school building was built in 1979 and originally designed as a school for the physically handicapped. An example of some of the physical elements that reflect the school's inital designation include a centralized one-way mirrored glass room in the center of the first floor instructional pod area originally intended for educational researchers to conduct unobtrusive observations is now the home of the school's computer lab. To date, due to rapidly changing demographics the school has never operated as originally intended. Today the school serves only one physically challenged student who is wheelchair bound (an elevator does allow this student access to instructional space on the second floor). The school does however, with the help of a federal grant for early education, serve 107 children with a variety of learning disabilities; thus the spirit of Robert Coleman still lives in this school.



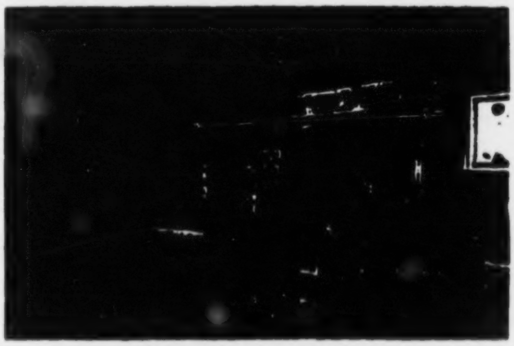
The main entrance of Robert Coleman as viewed from the entrance drive.

A DAY AT THE SCHOOL

Arriving at the school site one can immediately sense pride and excitement: bright colored banners, draped over the entrance shout "Believe!, Achieve! Succeed!", "HOSTS: Help One Student to Succeed", "Fight-Free School" and "Sylvan Education Center." The barrage of banners and the bright yellow entry doors are welcoming and anticipate and reflect the frienzed, yet exciting activity contained within.

The main door buzzer rings almost continuously between 8:00 and 8:20 AM as older children and parents accompanying their younger children stream into the school's entrance lobby. The main lobby is clearly too small to accommodate the large influx of people, although it is clear this place is teaming with energy and excitement. The lobby contains historical anecdotes of famous African Americans, proverbs and plaques bearing information pertainent to the founding of Robert W. Coleman Elementary School and posters reinforcing positive attributes such as love, determination, perseverance and honesty.

Before school even begins students eagerly consume their breakfast providing many of these children their only nutritious food of the day (some 80% of students at this school qualify for Title 1, a federally-funded program). Some children clean up afterwards, others do not. When students start to move to their classes, parent volunteers and kitchen employees begin the task of cleaning up the Commons, then preparing it for lunch.

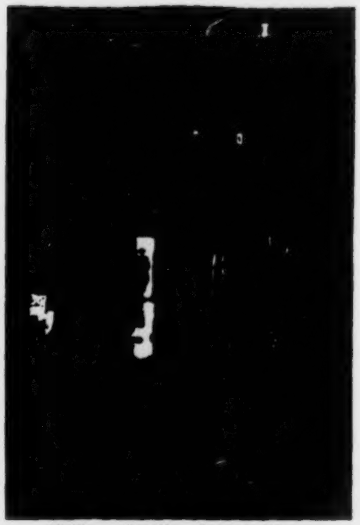


View of Commons from Lobby

A ten-year old boy serves as an internal corridor "crossing guard" to ensure safe passage as students rush from the Commons to their respective classrooms. The young boy, complete with safety-orange stripes and plastic badge exclaims, "I make sure kids don't run."

The hallway is wide enough for most daily traffic, but the sitting area located against the south wall of the corridor, along with groups of conversing staff and teachers causes a bottleneck in the entry corridor creating confusion for people coming and going through the entrance doors.

An active Commons serving as the morning cafeteria



Hallway leading from Lobby

It is during this period and at dismissal at the end of the school day that the school experiences its greatest threat from intruders: wallets, purses, microwaves and even tens of thousands of dollars worth of computers have been taken from the school in the recent past. The policy of the school is that everyone who enters the building must come into the office and obtain a pass. Unfortunately, this policy is not enforced for the reason that it is difficult to see people coming into the school and difficult to stop them from wandering down the corridor leading to the instructional areas. The location of administration off to the side of the main lobby does not lend itself easily to controlling access to the school.

Related to the problem of uncontrolled access to the school is the problem of parents wandering the corridors looking for their children's classroom. The working group agreed that providing more visable signage to each academy and classroom would resolve the problem of parents wandering in and out of classrooms, causing alarm to teachers who interprete wandering parents as possible intruders. What makes the management of the intruder problem most difficult is that the school is often open all day long with after school programs until late at night.

As a partial measure in controlling access, Ervin, the head custodian, or "team leader" his official title at the school, serves as a watch during the morning and at dismissal stationing himself at the end of the corridor from the main entry to be on the watch for strangers. He sits in a chair at the end of the corridor and socializes with other teachers and support staff as he simultaneously greets entering students and teachers.

Ervin takes seriously the well being of his 'customers' — he is an employee of Johnson Controls, a private facility management outsourcing company. He sees himself as a role model and mentor for the students. Ervin's official responsibilities are blurred by his involvement with the students: "I look out for them...I like to tell them my story whenever I can." In a way, "Mr. Ervin," as the students call him, serves as a makeshift authority figure for students.

The custodial and maintenance staff has taken a number of steps to decrease the likelihood of unwanted intruders, as well as building and car break-ins and graffitti. Three security cameras installed on the outside of the building by the Johnson Controls maintenance staff in the past year have not stopped the frequency of car break-ins either — "they know no one is watching those cameras." Safety in the parking lot from assault, auto vandalism as well as safety from intruders continues to be a high priority for this school. The head custodian makes rounds around the building at regular intervals throughout the day to make sure exit doors are indeed locked from the outside. Graffitti problems have been resolved by relentlessly attacking the problem through the use of a pressure chemical wash on the back of the building where most of the graffitti appeared. "Its been a year since I've had to use the wash," the custodian says.

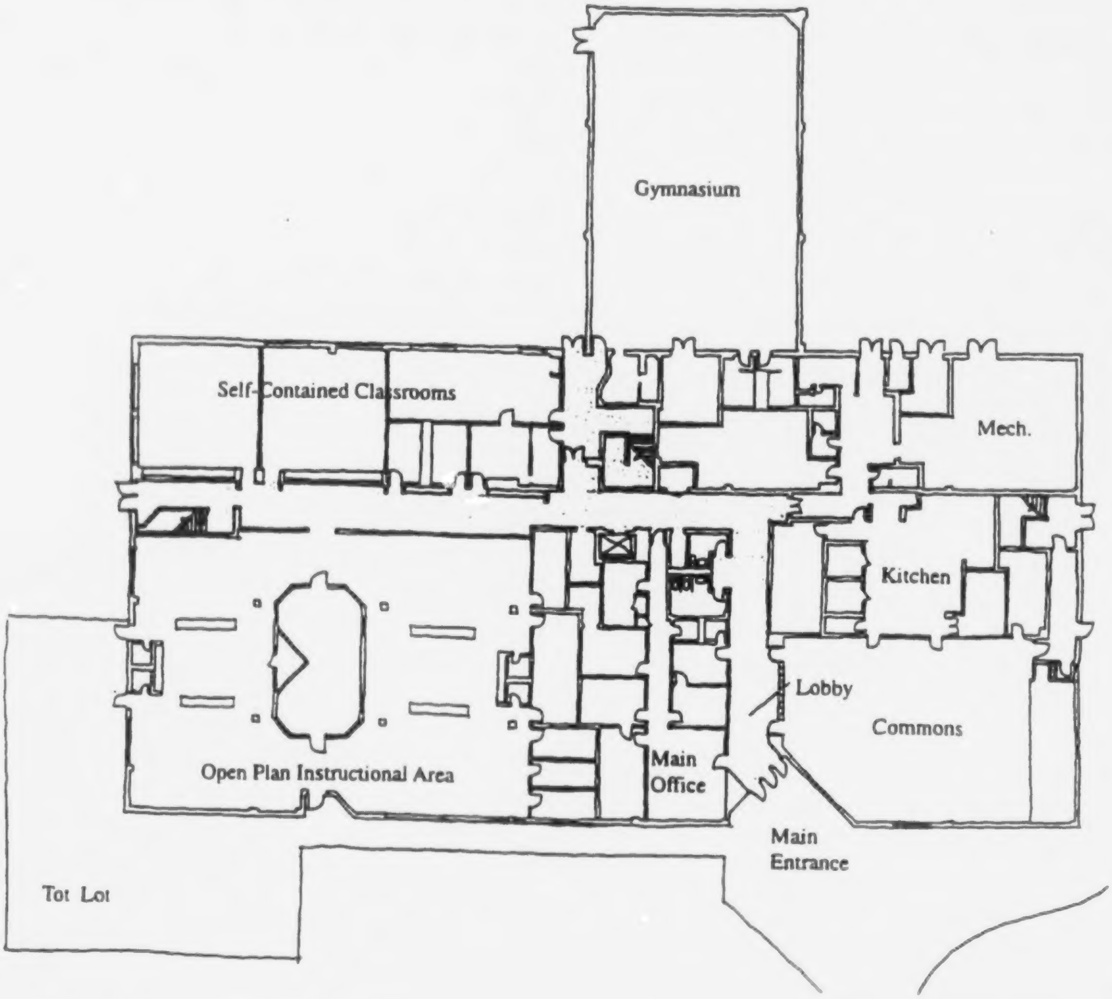
To Team Leader Ervin, environmental quality means safety and cleanliness. The school has had no safety accidents in the school since he has been there. He states, refering to his employer, "they train you to death, safety is central." In addition to his concern for safety within the school, Ervin cleans the grounds every morning and intermittently throughout the day, "its the first thing vistors look at" he says. There was glass everywhere, but now that is under control. The only problem he has now is "kids throwing trash on the grounds," but he is patient with them stating that "sometimes they have no place to put trash so they put it on the ground." Instead, he tries to instill a sense of responsibility in the students to take pride in their school.

The bottleneck problem at the school's entrance lobby is only a first indicator of the crowding this school is experiencing. Currently, 516 students, from kindergarten through fifth grade, 32 teachers and 28 staff members occupy a building originally intended to accommodate 180 physically challenged children. Class sizes range from 10 to 15 for special education classes, 20 to 38 students for kindergarten classes, and between 32 to as many as 47 for classes in grades one through five.

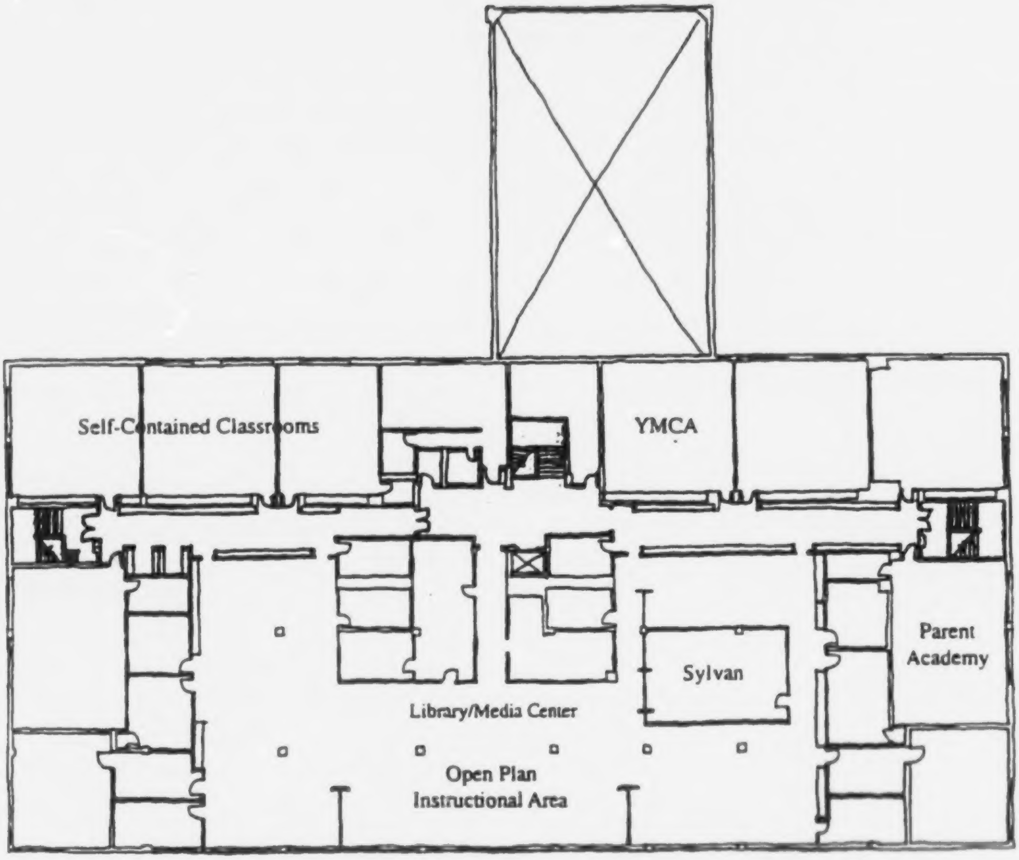
Currently, there are no standards for the size of academic learning areas which vary from state to state. However, there is nationally, one organization that has begun to rethink the sizes of educational spaces. In their Guide for School Facility Appraisal, the Council for Educational Facility Planners International (CEFPI) state, "New forms of instruction require greater amounts of space than in the past. Special education, remedial classes, cooperative learning, and community participation all create spatial requirements that differ from earlier periods of education." CEFPI recommends the following: The "building capacity" of an elementary school (the number of students capable of occupying a school facility) can be measured by taking the total gross square feet of the facility and dividing by 90 GSF/ student (90 GSF being a CEFPI recommended number). The recommended gross square footage per student for kindergarten and pre-kindergarten classes are: minimal 30-35 GSF/ student, acceptable 36-40 GSF/student, ideal 40-48 GSF/student. The recommended gross square footage per student for elementary classes: minimal 23-27 GSF/student, acceptable 28-30 GSF/student, ideal 31-36 GSF/student.

Taking these standards as a means of assessing the conditions at Robert Coleman, the school building is above its capacity of 446 students at 582 students (at the time of the assessment). Pre-kindergarten and Kindergarten classrooms are below minimal standards at 26 gross square feet per student. In addition, the First through Fifth Grade classrooms are below minimal standards at 19 gross square feet per student.

Overcrowding at Robert Coleman may be experienced from the lack of effective auxiliary space, caused in part, by the influx of interagency programs and also by the inefficient use of remaining open space. The adminstrative area has become tight due to the addition of special functions, and the management of traffic within open space instructional areas


Gymnasium
Self-Contained Classrooms
Mech.
Kitchen
Lobby
Commons
Open Plan Instructional Area
Main Office
Main Entrance
Tot Lot

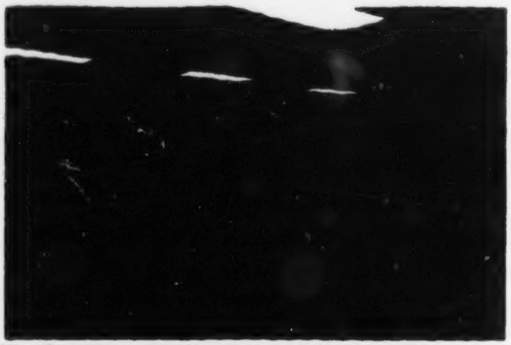
First Floor Plan


Self-Contained Classrooms
YMCA
Parent Academy
Sylvan
Library/Media Center
Open Plan Instructional Area

Second Floor Plan

are uncontrolled and crowded. There are few opportunities for the entire school to assemble in one space. The only two assembly spaces available are the gym and the commons room and neither is large enough to handle the entire school body.

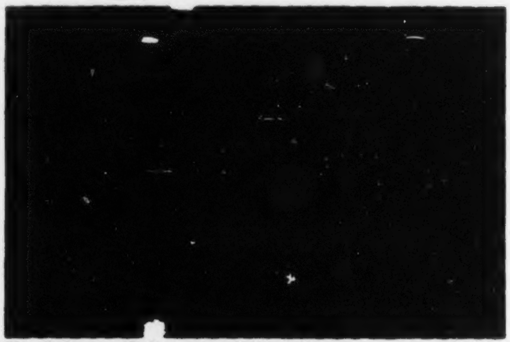
During mid-morning in the Commons a teacher works quietly with nine students at a circular table on the Commons stage. No other people are present, accept the kitchen staff that walk in and our of the room quietly enough not to disturb the small group working silently on the stage.



The Commons stage becomes a small group instruction space to escape the distractions of open space.

Teachers have been creative in adaptatively using the available space within the school for a variety of latent functions. The Commons, which optimizes the "multi-purpose room," acts as a cafeteria, a teachers meeting room, an auditorium and at times an instructional space.

The Gymnasium also serves multiple functions in addition to the expected physical education activities. The "Coleman Cafe," for instance, is a special lunch place for students: an opportunity to eat in the cafe is considered a privilege and a reward.



The Coleman Cafe - a special lunchroom - uses available space in the gymnasium.

Circular tables in the Coleman Cafe are complete with skirts and celebratory decorations. Signs identifying "Coleman Cafe" are on the walls surrounding and marking the area of the cafe.

In addition, the gym, like the Commons, acts as a place for small group instruction. Although the fluorescent lighting in the gym flickers and is inconsistent and uneven, teachers still seek out these spaces for opportunities for private instruction. Often, even with the gym being used as a setting for physical education, tables from the Coleman Cafe and from previous small group instruction continue to occupy space in the corners of the gym.

Lockers further illustrate the tightness of space and its potential affects on students: two, three, sometimes four students share a single locker, causing feelings of crowding and lack of privacy. Students have lost coats, books, bags, tennis shoes and other personal items while sharing lockers with others. In a positive sense they learn how to get along with others and share, but often at the expense of privacy and not having a place of one's own within the school. According to teachers, what makes the students' lack of privacy in school most unfair is that these same students continue to experience a lack of privacy in their own homes where they often have no place to be alone being crowded with their family into small apartments.

Organizationally, the school operates as three schools, or "campuses" in one engendering a social climate of belonging. The Primary Coleman Campus includes Pre-K to First Grade and is located on the first floor in the main instructional area. The Coleman Center includes Grades Two and Three and is located on the east end of the second floor, while the Marshall/Mitchell Academy includes Grades Four and Five on the west end of the second floor. Students spend most of their day with others of similar gender from their academy — boys and girls are separated by class with the belief that this strategy reduces distractions caused by social relations between genders.

The physical building layout that houses this school-within-a school organization, provides both open space instructional areas (approximately 5,400 GSF of actual floor space) and self-contained classrooms (8,900 GSF) on both floors. Taking into consideration all instructional space (primary, support and supplemental), the total amount of effective square footage of the building is approximately 19,700. On the first floor, three self-contained classes are provided opposite a pod design providing space for four basic instructional areas with a central enclosed space originally intended for observation while providing auxillary spaces off the open pod for therapists, storage and small group instruction. Two banks of cubbies located between the instructional areas affectively divide the open space in half, as well as providing a small commonly-shared space used by both teachers. On the second floor, eight self-contained rooms are opposite a larger open plan instructional area which also contain auxillary spaces for various specialized functions. The entire school, including instructional space, assembly space (4,700 GSF) and facility support space (16,800 GSF) totals approximately 41,200 gross square feet.

In an effort to find support for improving the conditions of learning for students of Robert Coleman, the principal partnered with Education Alternatives, Inc., a private management firm, to help with financial budget concerns. As part of this partnership they obtained the custodial and maintenance services of Johnson Controls. Coleman has been consistantly satisfied with the responsiveness of the custodial staff compared to the previous custodial services provided by Baltimore City. On hearing that they may lose Johnson Controls in the Spring of 1996, one staff member stated "I hope we can keep them." It is more likely, one teacher suggests, that the Johnson Controls custodians will become employees of Baltimore City in March when EAI's contract expires.

"When you don't have the comfort you need to maintain a healthy body you don't care about socializing, you don't care about history lessons and the revolutionary war, your worried about survival...thats one of the basic needs, the hierarchy of needs." [Third Grade Teacher]

Even with the private company, particular environmental quality concerns still continue to surface. Good custodial responsiveness and general maintenance can go only so far. At some point, building systems that operate inefficiently must be addressed as well. The condition of the aging mechanical system along with the lack of adequate bathroom ventilation have continued to concern teachers: "We have a much better regulated system now, but it still gets cold in here," one teacher remark summarizing the general feeling on the second floor. Another teacher is more blatant, declaring, "I live in Alaska most of the time!" Some rooms are colder than others. Rooms at the west end of the second floor in the second and third graders' Coleman Center seem to be the most disadvantaged. Cutting down air in the one pod only has the effect of eliminating air in another. "Now that it's winter, " the same teacher exclaims, "We're on a tropical island!"

Action Request records of Johnson Controls indicate that the company routinely conducts preventative maintenance inspections on the mechanical systems as well as responding to specific requests. The maintenance crew has over the past year repeatedly responded to calls complaining of the lack of heat by restoring bleed return lines, replacing and repairing univent heating coils, responding to boiler misfires, cleaning boilers found to be smoking, replacing defective motors on heat pumps.

Despite the responsive work of the maintenance staff, problems with heating and cooling remain a top priority of teachers. They strongly agreed that environmental quality of thermal comfort and health is a primary need that affects student performance, social development as well as their own teaching performance.

Ventilation is another problem highlighted by the working group. Again, it was felt that the custodial staff are very responsive and accommodating, but all the cleaning in the world isn't going to solve the problem of bad smelling bathrooms that are used all day long. One teacher who brings in her own deodorizer to eliminate odors reaching her instructional area commented,"Sometimes you need a surgical mask to enter the bathroom." The problem of ventilation is suspected to be due to old and inoperable fans that vent air back into classrooms instead of outside . The maintenance staff has on several occasions checked roof exhaust fans, motors, power and switches, however the problem seems to remain. The custodial team leader echoes the concerns of teachers, "cleanliness is the most important thing," he says. "At first, bathrooms smelled so bad, it was so distracting...there was trash in the hall due to no trash cans...it took six months for me to be in total control of what I wanted to do here."

An overlapping concern for outdoor ventilation for teachers are the condition of the exterior windows in the facility. Like many windows in the schools around Baltimore City the windows are constructed of a shatter proof semi-transparent plexiglas originally specified presumably to cut down on the cost of replacing broken glass and to make it more difficult for intruders to enter the building. Most windows in Robert Coleman are either locked or fixed to further eliminate the possibility of breaking and entering as well as to provide some control over the intake of outside air for the mechanical system in both the heating and cooling season. Unlike some schools in Baltimore City, Robert Coleman does not have bars on the ground floor windows. The result of this choice of fenestration system is that windows which cannot be openned are unable to provide the needed ventilation to temper the fluxuations in the indoor environment, natural daylight, views out and just fresh air. A science teacher laments at the inability to conduct science projects due to the lack of ventilation that could be provided if he could open some windows to the outside. Another teacher complains about the lack of connection to the outdoors, "We can't see the park just outside our windows!"

Another priority for the working group is playground safety, as one teacher stated "Playground safety is No.1." The only playground equipment is a monkey bar located on the west side of the building. "There is no facility for younger children to do gross motor activities and the playground that is out there...well, if anyone took a tumble from those monkey bars they could smash their head open." Although no major accidental falls have ever occurred on the playground, the possibility of accidents concerns teachers.

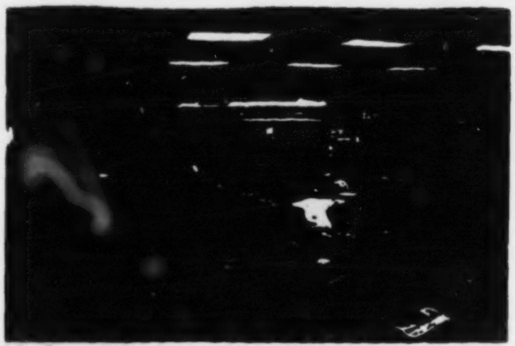
The playground is unsafe and lacks developmentally appropriate play equipment.

One teacher described a recent incident that frightened her: "I was scared to death when I saw about fifteen kids run down the hill towards Douglas. About four of them could not stop and this car almost hit all four of them at the same time, I just stopped and grabbed my chest." What complicates the lack of playground safety are the fears of teachers that the school is located in an unsafe neighorhood environment. One teacher will not take students up onto the high school's football and track field for fear of her students' safety.

One idea that surfaced during the workshop discussions was the idea of involving students in landscaping projects such as planting a tree. The thought was that this kind of project might help "children take pride in what's here instead of destroying the landscape that is here." One teacher described a previous experiment with a garden she had her students grow: "We had a garden out front and the children would grow vegatables in the classroom and take them out and plant them in the garden. Homeless people were invited to take vegetables from the garden." Although the group felt that pursuing this activity could contribute to both student learning and social development, it was decided that the project was of moderate priority at this time.

"The person that designed this school should be shot, or at least be forced to teach in Mr. James' classroom for awhile!"
[Working Group Member]

Probably the most complex problem that teachers are concerned with is the distraction caused by open instructional space. In addition to the typical problems of open space areas (visual and auditory distractions for teachers and students) these areas are inefficiently layed out and organized, obstructed by structural columns and do not provide nearly enough wall space, or enough floor area for activity centers. There seems to be no correspondence between the size, shape and configuration of the makeshift classrooms and the educational activities that are contained within them.



Mr. James' classroom space caught between a corridor on the left leading to other open space instructional areas and a passageway on the right leading to the boy's bathroom.

The open space on the second floor, the space shared by Coleman Center and the Marshall/Mitchell Academy has become a cluttered, incoherent and unorganized mix of classes surrounded by partitions resembling war bunkers. There are make-shift dividers employed to identify the boundaries of the classroom: high desks, tall charts, bookshelves left from the library/media center, modular plastic shelving and remnants from a 1950s office partitioning system.

The second floor open instructional area leading to the library/media center

The battle to keep out noise and distractions from other classes moving past these fortresses is never ending. Several teachers feel their students are constantly distracted by other classes that pass by enroute to adjacent rooms. The location of the bathrooms within the open space is also a particular problem for those classes located adjacent to them. The conditions in these open instructional spaces teachers have lived with for years without knowing how to address, let alone resolve the problem.

In one particular fourth grade instructional area off the main corridor in the Marshall/ Mitchell Academy, is a corridor on the east side of the area that leads to several other open classroom areas, and on the west side is a door that leads to a boys bathroom. Students must literally walk through and disrupt the fourth grade class every time they need to use the bathroom. This makeshift passageway to the bathroom creates a constant zone of movement that continually distracts the class assembled in the adjacent space. This same instructional area contains a structural column that obstructs the view of the teacher, Mr. James, wherever he is in the room.

It just so happens that the working group is holding its workshop in Mr. James' room. This is not the only instructional area that is experiencing problems; it just happens to be the worst example in the school. The outcome of the poor planning of these instructional areas is decreased adaptability of the classroom area — those areas have become, in effect, wasted space for teachers.

One teacher observed that her school was "Not using open space as it was intended: for team teaching, sharing with other classes, group work and planning together." As one administrator commented, "The only problem in this situation, is that people are not trained to work collectively, its very hard, its a whole philosophy that you have to integrate into the school; you have to talk about looping, about dealing with non-graded situations." For instance, she suggests the possibility of an indoor play area for kindergarten and first graders on the first floor in the Primary Coleman Campus : "You would have the space if you restructured the room...but, that takes alot of commitment and time and administration...equipment, materials and such and it only works when we don't have...this hodge podge. You can't use a space created for something else."

A crowded third grade instructional area on the second floor with computers facing the exterior wall. Window blinds are shut to reduce glare at the terminals. One student tapes cardboard to the top of the computer to further decrease glare.

All teachers in the working group agreed that the plethora of problems experienced by teachers in open space instructional areas has a direct affect on student performance, social development and their own teaching performance. The sentiments of the group were best summed up by the administrator, "These teachers are working against the facility so much that it takes energy out of them for teaching." Finding a way to address this environmental quality problem of classroom adaptability is one of the highest priorities of the group.

One casualty of this territorial battle for open space is the desolate library/media center. The school lost their librarian due to budget cuts, yet books, now over 30 years old, litter the book shelves with no sense of order. One parent observed,"We just use what we have. We haven't had a library in four years."

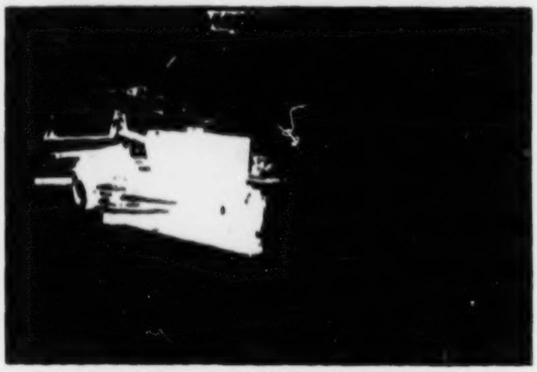
Three computers are located within some remaining caroles but do not operate due to a shortage of available staff to maintain them. Books lie strewn across various bookshelves now used as partition barriers by instructional areas on both sides of the media center. The media center's tables are used by adjoining classes and small groups of students throughout the day.

The abandoned library/media center occupies a space large enough for an additional instructional area. This area has operated as a kind of second floor commons space for students.

The philosophy and long-term vision of the prinicipal with regard to libraries in general is that they belong in classrooms along with CD-Rom computers so that students have immediate access to information. However, until this is achieved, the media center — it is still called ironically "the media center" by the occupants — acts as a kind of central meeting place for students on the second floor and alleviates some of the problems with crowding on the second floor: students from one particular class will spread out, or spill over into the media center when it is not in use by any other group. Discussions as to how to most effectively utilize this area have been a major topic of concern during both the interviews and workshops.

The problem of unorganized storage illustrates and mirrors the problems with teachers not taking ownership of shared space. Although it has been an issue all teachers have been aware of, nothing was done until just recently. As one teacher stated "We have adequate storage. It just isn't organized as well as it could be." The possible impact this problem might be having on teacher performance was reflected by this comment made by the master teacher, "I can't do an inventory. I can't find 90% of the stuff. Whats in here?...Old furniture thrown in, manipulatives, books that have never been used, charts...got some excellent things that have never been used!"

Since shared storage is so difficult to use, many teachers store their materials and books in their instructional area. This creates another problem. As several teachers claimed, "I had fifty books missing after intercession...I had library books taken off my desk during intercession that I had to buy." After reflecting on the unorganized storage problem, the working group felt that addressing this concern was a high priority that could be addressed immediately.



One teacher's chaotic and disorganized work area within one of the existing open instructional areas on the second floor

The overall attitude of the group concerning the complex problems of managing open instructional space were summarized by this teacher's comment, "We have become so accustomed to these things that they don't seem as important anymore." The workshop had given the small group of teachers a chance to reflect more thoughtfully their environmental quality concerns as well as providing an opportunity to carefully consider ways of addressing these concerns.

FINDINGS & DISCUSSION

The previous section describes in some detail the more critical of the twenty-seven (27) distinct environmental quality issues of concern at Robert Coleman identified by the working group (See Appendix B for a complete listing and summary of these issues).

Some of these issues overlap and in some cases, contradict each other. For instance, the desire for natural daylighting, fresh air and outdoor views were often overruled by more critical needs for security from potential intruders, which dictated the locking of first floor windows and shutting the blinds. To further understand the implications of these issues on the educational process, through the assistance of the working group, issues were categorized by (a) ten attributes of environmental quality, and (b) their potential influence on three broadly defined educational process outcomes; student performance, student social development and teacher instructional performance.

Ten distinguishable attributes of environmental quality have emerged from the intersection of the researchers' findings in Baltimore City Public Schools and what is known from previous research literature. Not only was there a desire to understand the nature of the interaction between the various attributes of environmental quality, but the appraisal of teacher perceptions of the potential influence on the educational process was desired as well. What follows is an analysis of the relationship between these attributes of environmental quality, the issues raised in the working group and their percieved potential impact on the three educational process outcomes.

1. Physical Comfort and Health *refers to the degree to which occupants feel the indoor environment meets your physiological needs with respect to thermal and air quality, illumination, noise and odors.*

- After problems with classroom adaptability, physical comfort and health was percieved as having a potentially large impact on student performance, social development and teacher performance. The school is on occasion too cold (#3), has perceived poor air quality (#4), lacks ventilation for science projects (#12), and has no views of fresh air from windows (#21). According to teachers these environmental issues combine to limit, at times, the performance of both teacher and student.

- The lack of bathroom ventilation (#7) while admitted as having little to do with educational outcomes does contribute to unpleasant odors,

- while the plumbing and drainage system has on occasion failed to prevent flooding on the first floor (#25) creating a potential for health risks.

2. Classroom Adaptability *refers to the degree to which occupants feel that the physical classroom space can be adapted to different and desired educational activities and functions.*

- Not surprisingly classroom adaptability was distinguished by the working group as the most directly influencial quality potentially effecting the educational process. Issues such as overcrowded classrooms (#2), the underutilized library/media center (#6), problems with computers (#8), concerns over open space versus self-contained (#13), and unused space between the first floor instructional pod areas (#17) were all seen as potentially hindering student performance as well as student social development and teacher performance.

- Overlaps between classroom adaptability and other environmental quality attributes such as privacy, crowding, personalization and ownership add to the perceived impact of classroom adaptability on the quality of the educational process.

3. Safety & Security *refers to the degree to which occupants feel the school building contributes to protecting occupants from harm, injury, or undue risk.*

- By far the most important influence of safety and security on the educational process is in the area of teacher performance. Four issues contributed to this finding, parking lot safety (#11), ventilation for science projects (#12), safety from intruders (#14), and no views out of windows (#21). Teachers experience an ever-present undercurrent of anxiety concerning the unsafe school grounds. Locked and frosted windows constantly remind teachers of the surroudings. Stories of past intruders remind teachers of the lack of control they have at times even within the building. Although teachers feel psychologically safe within the building and often claim to be habituated to the situation, an ever present concern for their safety and the safety of their students pervades their day and is every so often heightened by new events that may impact directly on them. These feelings, they argue, indirectly affect their performance by distracting them from their immediate task of teaching.

- Concerns for ventilation safety (#21) have kept one teacher from conducting science projects in his instructional area affecting not only his own performance, but also hindering potential curricular choices thay could impact student performance.

- Safety on the playground (#1) is interpreted by the working group to hinder possibilities for student social development, in that with deteriorating conditions of play equipment and grounds do not as easily support teachers' attempts at organizing constructive play, as well as being more reluctant to have students play on the grounds.

4. Building Functionality *refers to the degree to which occupants feel the various places within the school building are functionally compatible with your school's educational programs and activities.*

- The centralizing issue reflected in Robert Coleman is the lack of correspondence perceived between the building as it was intended to function, as a school for the physically disabled, and the way in which it actually functions now, as an emerging community school (#16). Currently, these mismatches are perceived by teachers to be affecting student performance and social development, as well as their own performance.

- The underutilized library/media center (#6) limits effective space for instruction, while the inadequate lobby design (#5), and lack of space for school-wide assemblies (#27) limit opportunities for quality social interchange between students, teachers and the community. In addition, teachers feel their performance suffers when they must cope with an abandoned library/media center (#6), unorganized centralized storage rooms (#10), a crowded adminstration area (#18), and directing lost parents who cannot find their student's classroom (#9). Combined, these issues form one of the most critical environmental qualities negatively affecting the educational process.

- The administrative staff at Robert Coleman being fully aware of the impact of building functionality on their educational delivery is proactively addressing the problem through the re-design and reassignment of instructional space.

5. Aesthetics & Appearance *refers to the degree to which occupants feel the school building is attractive and provoking.*

- The appearance of Robert Coleman's school building was perceived as influencing occupant and vistors' first impressions of the school. A clean school equals an orderly school. Clean and shiny floors, flourescent light strips brightly shine without flickering, displays are orderly and colorful, these are the symbols of a school that is on a progressive track toward excellence. The quality of aesthetics and appearance is perceived as potentially supporting social development and cultural awareness and pride in students as well as visitors to the school. Maintaining a positive appearance to the building reinforces personalization and ownership in not only its occupants, but in the community as well.

- For Robert Coleman, this vision comes up short when the working group mentions the unsafe playground (#1), in inadequate lobby design (#5), lack of views out frosted and dull windows (#21), and student work displays (#23).

- One area that is holds promise is the landscaping projects (#19) discussed by the teacher group.

6. Personalization and Ownership *refers to the degree to which occupants feel the school building offers opportunities to create a personal and self-expressive environment and engender a sense of ownership.*

- Student social development was seen as the educational process outcome most potentially influenced by the attribute of personalization and ownership. Overcrowded classrooms (#2) are seen as not providing enough opportunities for personalization.

- Landscaping projects (#19) are perceived as potentially encouraging increased ownership in the school grounds.

- Signs of academic unity (#22) are read as strengthing a sense of ownership in students toward their academy,

- while student work displays (#23) are believed to instill some pride and ownership of students encouraging their social development.

7. Social Places (Places for Social Interaction) *refers to the degree to which occupants feel that places within the school building provide opportunities for meaningful social exchange and interaction.*

- The quality of social places was one of the perceived qualities that garnered the least attention. One possible reason for this is that the entire school promotes continuous social interaction which gives Robert Coleman its feeling of vitality and excitement, but also limits opportunities for respite.

- Some social places recognized by teachers within the school that were linked to environmental quality issues included the underutilized library/media center (#6) which has become an informal place for students from various classes to gather and socialize as well as an informal small group instructional area.

- The entrance lobby (#5) was identified as social place in need to improvement with respect to lighting and layout of seating arrangements.

- Shared lockers (#20) are seen as a place encouraging social development even as sharing produced feelings of lack of privacy, personalization and ownership on the part of students.

- The non-use of the teacher lounge (#26) as a social place was not seen as a problem for teachers given that they informally interact with each other in other places in the school such as corridors, adminstrative offices and in numerous staff meetings.

8. Privacy *refers to the degree to which occupants feel that there are places within the school building which provide opportunities for an individual or a small group to be free from the intrusion of others.*

- Experiencing the quality of privacy in Robert Coleman is a rarity. Due to overcrowded classrooms (#2) were no one has privacy, and open space classrooms (#13), both student performance and teacher performance are believed by teachers to be suffering. Distractions from within the crowded classroom as well as distractions from outside the instructional area severely limit time on task according to teachers.

- Added to the lack of privacy during instruction, students must continue to experience the lack of privacy while securing items from their lockers often shared with one or two additional students.

- The teachers' lounge (#26), although a possible haven for teachers is not used due to the lack of time to get away from continuous daily activities.

9. Sensory Stimulation *refers to the degree to which occupants feel the school building provides a stimulating environment for learning that is safe yet challenging.*

- Most of the schools in the study tended to rate themselves high with regard to providing a stimulating environment for students. Robert Coleman admitted to being at the same time overstimulated in areas and understimulated in others. The quality of sensory stimulation was understood by teachers to potentially influence social development over student performance.

- Limited use of the unsafe playground (#1) was seen as limiting potentials for social development,

- while landscaping projects (#19) it was argued provided opportunities for social development of students.

- Student work displays (#23) were perceived by some to be positively stimulating to students, however others felt that displays were less effective in carrying a message due to their chaotic organization and lack of theme across the school.

- Teachers pointed to the lack of views out windows (#21) as evidence of a lack of sensory stimulation that has the potential of hindering their performance.

10. Crowding/Spaciousness *refers to the degree to which occupants feel the school building cannot adequately accommodate the number of students and teaching staff occupying it.*

- The attibute of crowding is most evident in overcrowded classrooms (#2) where teachers feel student performance, social development and teacher performance suffer. Being in close quarters, students often feel their personal space is violated resulting in fights and distruptions that interfere with instructional learning.

- The crowded administrative area (#18) gives the impression that the school is at the same time lively and active as well as unorganized and chaotic.

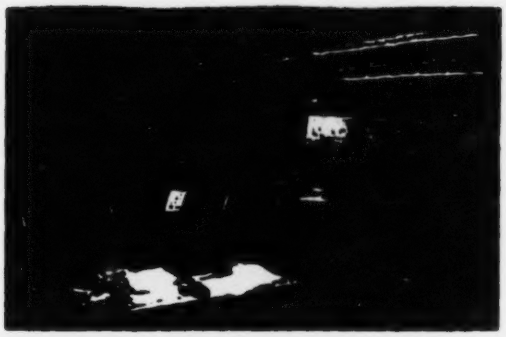
THE SOLUTIONS

By the end of the second workshop involving the four teachers and the assistant principal, the group was ready to act. Discussing the problems with the open space layout consumed much of the group's discussion. The assistant principal declared, "I think its a priority that should be looked at, and one of the things this group can start thinking about for starting to plan for next year in September is 'can we use this space differently?'" She stated that this assessment process has given them impetus to question what they could do to improve their educational environment: "By doing this, we have been able to look at some stuff and say, hey, we have a bad thing, but how can we make it better? How can we use it more effectively?... and thats going to help us."

The desire for further structural changes on both the first and second floor open instructional areas is a high priority environmental quality concern that overrides many of the previous concerns mentioned. Teachers in both instructional areas were open to any suggestions that might emerge from the working group. Many of the problems of the second floor open space instructional area are echoed on the first floor. The main focus of discussion centered around the location of the existing cubbies that divided up the open space in a formal way preventing additional space needed for desired learning activity centers.

In some ways, the principal was way ahead of our working group. She had already contacted a group of volunteers to begin the process of not only reorganizing storage space, but also dismantling the media center as a first step in reorganizing the physical space in the school with the intent of accommodating a health agency suite on the second floor. Once word about these decisions surfaced in the working group during the second workshop in December 1995, they quickly moved to formally present and influence these physical and organizational changes taking place to the principal and the School Improvement Team (SIT) committee.

Action is being taken by Robert Coleman to identify and address many of these and other aspects of environmental quality in their school (see the Appendix B for a complete listing of the final issues arrived at by the environmental quality assessment working group). As a result of a series of interviews and workshops between September 1995 and February 1996 discussions have begun between teachers, the SIT committtee and the principal concerning ways to rethink the entire school facility to more closely fit the educational programs that currently exist, along with those school-community partnerships that will soon be sharing space with these programs.



Discussing environmental concerns during one of the assessment workshops

Robert Coleman has been working closely with the Woodburn Center, a school for children with severe emotional problems, as well as Lamell Middle and Douglas High Schools to develop a community school at Coleman. They were inspired by a visit to a "Beacon School" experiment in a child welfare school in New York (get literature on from Kate). The school has everything from a dentist, health clinic, school store, and other health services. Consequently, Robert Coleman has made the decision to start with the development of a health services center within the school although a health service provider has not been identified as yet. The goal is to find a provider and provide space within the school by the next school year.

As a result of the workshop and discussions with the principal, several options were identified for the inclusion of a new health suite within the school. However, before these options could be developed, several wider implications of bringing in another outside agency into the already crowded school facility needed to be addressed. The following is a brief outline of a set of assumptions and ideas generated through group discussion that were addressed prior to developing options.

There are many inefficiencies in the use of current space. Several storage areas on either side of the second floor open space are examples. Consolidating storage to a few central areas may have the effect of freeing up additional space for the health suite. Another that has been discussed at length is the "media center" area that has not been used as a media center for some time. Questions concerning the need for a separate library were discussed.

The consolidation of the YMCA and Parent Academy spaces was also raised as a possible option. Both are seen by many, but not all staff members, as having limited use. Before changes in the status of these spaces can even be considered, discussions must take place with both the YMCA and parents who operate the Parent Academy. The importance of the Parent Academy must be retained even if it is relocated. This space has become a kind of "thank-you" space to parents who spend subtantial time in the school — it is felt that they should have their own room for purposes of self-identity. Also, the Parent Academy is used as a "semi-daycare" room in addition to being a workspace for parent volunteers, and is also a parent workshop room.

The possibility of moving the Sylvan Learning Center back along the corridor wall to open up central open space was discussed. However, due to contractual relationships with the company and the cost associated with such a move many felt leaving the space in its current location was the best solution. It is agreed that Sylvan's awkward layout creates some problems with respect to available classroom space, but attempting to include them in re-design might be overly difficult.

The potential of consolidating two special education rooms into one self-contained room was discussed as well. The idea behind this move is that two existing special education classes that currently occupy open space that generate distraction could be moved to a self-contained room, such as a fifth grade room, where they could be provided more privacy. Then that class would be moved to the large open space reconfigured to accommodate them more effectively.

Time-sharing space use was another possibility to resolve the no-additional-space problem. Some rooms could be shared, but a strategy for cooperative use of shared space would have to be worked out with occupants of those spaces. If for example, the health suite is to be in operation during Intersessions only, it could share space with a classroom located near a bank of enclosed rooms on either the first or second floor.

Providing portable classrooms was another option discussed. This is often a standard approach to a school that is expanding — to slowly accrete additional space outside the existing school. Portable classrooms can be bought at a low price and provide additional classroom space, however, it could be argued that this option only creates more problems in that it is only a short-term solution to what is actually a long-term problem.

The Reading Lab and Consulting Teaching Rooms are two rooms that were also discussed as a possible central location for the health suite rooms, however, they are sizable rooms for instruction that would be difficult to give up.

There were some spaces that were seen as being off-limits to the facility re-thinking. These rooms included the faculty room which is a mandated space by law and the GATE program room on the second floor which requires a secure and locked room.

From these discussions three options emerged with a fourth being discussed at the SIT committee meeting.

Option A

This scheme first introduces the idea of having the Health Suite in the area now occupied by Mr. James. This area is divided up into two Health spaces, one a general area for waiting and possibly treatment or other administrative functions and another for a more formal office or treatment room. One other room (currently the storage room) is assigned as another office/treatment room for the Health Suite. This arrangement allows for easy access directly off the main corridor. This option also locates the YMCA in the center area of the open space for ease of access and visability. Ms. Baker can then move into the self-contained classroom for additional space and acoustic privacy and Ms. Baker's space can be subdivided into two smaller spaces for Ms. Jennings' and Ms. Kelly's special education classes. This scheme also isolates Ms. Norman's classroom from the open space with the potential of reducing noise.

Option B

This option moves both the YMCA and the Parent Academy into an open space that can be shared in any way appropriate — no boundary is determined for them. Both functions are out in the open and widely accessible to all children as they should be. Ms. Norman is relocated to the Parent Academy room and Ms. Baker is relocated to the YMCA room. Relocating these two classes provides acoustically isolated self-contained rooms for classes that did not have that available to them before. The open space becomes a place for more varied programmed activities such as might occur with the YMCA and Parent Academy. There is some concern about noise, but with the classes surrounding the space now behind closed doors, this noise can be controlled. The open space is once again reconfigured to take advantage of the unused Media space and wide left over corridor. This option places a Health area, Mr. Benkus and Ms. Kelly (special education), as well as Mr.James into a five or six foot high partitioned open space. Ms. Gilbert (special ed) can then move into Ms. Baker's existing area with some slight modifications in partitioning to help with additional privacy screening. The Health Center is located in a different location and takes advantage of as many existing small rooms as possible. Those rooms are reassigned and the functions that were in those rooms are either consolidated (somehow, such as storage) or relocated (such as Mr. Benkus who moves to Mr.James' existing area). Ms. Jennings moves from the workroom area to Mr.James' existing classroom area to make room for a consolidated central storage area. This room could also be used once again as a central workroom for all teachers.

Option C

This option keeps the YMCA and Parent Academy in the same location. The prior two schemes present suggestions for relocating either one or both into the open space to open up some self-contained classrooms for classes that need some acoustic privacy. This scheme assumes that this might not be possible due to the political nature of those rooms. The open space is once again reconfigured to take advantage of the unused Media space and wide, left-over corridor. It places Mr. Benkus, Ms. Baker, and Ms. Gilbert (special education), as well as Mr.James into a five or six foot high partitioned open space. The Health Suite is similarly layed out as in Option A.

A fourth Option emerged during discussions with the SIT committee. Here the configuration would be the relocation of the Health Suite as well as the YMCA and the Parent Academy on the first floor, into the self-contained classroom rooms opposite the corridor from the first floor open space instructional area were discussed. The advantage of this approach is that the health suite could be located near an entrance on the first floor so that it could operate more independently from the school and not create additional public traffic on the second floor. The Parent Academy and the YMCA provide a day-care function that is complementary to the health suite. The second floor layouts discussed in the first three options could still be implemented without the additional inclusion of the health suite function.

During the two previous workshops the issue arose of the inefficient open space instructional area on the first floor. This final workshop was an opportunity to address this issue in light of the location of the Health Suite on the first floor. Most of the discussion centered around distractions from other classes, and in one case, the overcrowding of students and desks that obstruct space for activity centers, and also the issue of the relative lack of use of the central cubby areas between classes. The function of this middle area between the instructional areas is ill-defined. Sometimes it is used as a makeshift office for teachers to review materials, other times during the day it acts as a small instructional area for teachers. Although it offers the possibility of more private space, it remains unused most of the day. The combined impact of these issues caused teachers to re-think the use of the space as well as the possibility of changing the educational program strategy for teaching Pre-K to 1st Grade.

Relocating the existing Pre-Kindergarten, Kindergarten and special education classes became the issue in this scenario. Ms. Fenster, the assistant principal suggested that the Pre-Kindergarten and the Kindergarten could be included in the existing open space instructional area across the corridor if the teachers could commit to an Inclusion Model with a non-graded structure. The vision of the activities of this non-graded inclusion model would be to develop a motor area, a climbing center, an exploration center, reading groups and other activity centers in which students would be rotating all day and where teachers would team teach. Presently, the layout of the instructional areas are "chopped up," inflexible and unworkable. To utilize the space better, Ms. Fenster suggested that movable partitions be brought in that could be moved around to accommodate different activities as needed. She arguedthat the notion of the "classroom" is foreign to this educational model and the open instructional space should continue to be used as it was originally intended — as a flexible and adaptable space for a wide variety of individual, small and large group instruction strategies.

At the Feburary 13, 1996 SIT committee meeting, the decision to follow a modified and phased Option A was reached. Storage rooms were to be re-organized, the second floor open space instruction area was to be reconfigured without assignment of particular classes. The issue of where the health suite would be located, either on the first or second floor, and other reassignments of classes

Debating environmental planning options at the School Improvement Team Meeting

The middle workspace between the first floor open space pod is seen as inefficient.

A crowded first grade class within the instructional open space pod on the first floor. Cubbies act as boundary between classes. Teachers in this pod complain there is no room for activity centers.

to newly created instructional areas on the second floor would be tabled until the fourth option could be explored.

On Monday, February 19, 1996, President's Day, the volunteer group from the Civic Works Project came into Robert Coleman to begin the ground work for implementing the new facility plans. Later in the month, another community volunteer group continued the process. Meanwhile, discussions regarding the rethinking of the educational program and its physical structure on the first floor continued.

It was at this same time period, late January, that the Baltimore City Public Schools publicly announced, through a press release, that Robert W. Coleman Elementary School, along with thirty-four other "low performing" schools was on a list of schools being considered for "reconstitution" — a process through which each school would undergo consultation with the State of Maryland to develop a restructuring plan to increase test performance on the MSPAP Performance test. As part of the argument for *not* being reconstituted, each school was to formulate an Action Plan, due May 15, for how they intended to increase the performance test scores.

The assistant principal suggested that the issues the environmental quality working group had addressed may have an affect on student performance, and the work at restructuring their school facility could become part of the larger Action Plan to further illustrate steps the school has been and continues to take to improve the educational environment at Coleman.

PROCESS MANUAL
FOR
ENVIRONMENTAL QUALITY DIAGNOSIS, DESIGN AND MANAGEMENT IN SCHOOLS

Process Manual for Environmental Quality Diagnosis, Design and Management in Schools

The following procedure outline provides an overview of the entire action research process followed for this project. Included in this outline are the objectives each step is intended to accomplish and the resources and participants necessary to meet these objectives. For this procedure to be adopted by an individual school, Item 1-3 would not be necessary. In addition, the degree of involvement depends on the level of commitment of the school community in participating.

Data Gathering/ Analysis Phase	*Objective*	*Resources/Participants*
1. CASE STUDY SELECTION PROCESS		
1-1. Planning Meeting #1 (Entry)	To establish initial contact meeting w/ district personnel to provide a more detailed description of the process of environmental quality assessment.	District Administration Staff
1-2. Planning Meeting #2 (Entry)	To receive approval to proceed with research process.	District Administration Staff
1-3. Case Study Selection Process	Identify comparably matched schools for the study.	District Administration Staff
1-4. Securing the Site (Negotiating scope & schedule)	Introduce the need for environmental quality assessment and indicate the resources required to complete the assessment. Negotiate scope & schedule. Receive approval to proceed with project at each participating site.	Principals of selected cases
2. BASELINE DATA COLLECTION PROCESS		
2-1. Physical Facilities Inventory	To gather preliminary data on school facility to establish a baseline of objective physical data.	8-12 hours of data collection per school after school hours.
2-2. Organizational Survey	To gather preliminary data on school organization to establish a baseline.	
3. ISSUES IDENTIFICATION PROCESS		
3-1. Interviews w/ Non-Instructional Staff	To clarify and expand upon baseline physical environment data	1 or 2 - 30 min. interviews w/ custodial management and staff
3-2. Interviews w/ Principal	To clarify and expand upon the curricular and instructional goals of the school	1 - 45 minute interview/ school
3-3. Interviews w/ teachers	To gather data on teacher perceptions of the environmental quality of their classrooms and other places within the school.	4- 45 minute interviews/ school

3. ISSUES IDENTIFICATION PROCESS (cont'd)

3-5. Student Survey Questionnaire	To gain an understanding of the student's perspective.	In-class 2-3 item questionnaire children (Grade Levels 4 and 5)
3-6. Parent Survey Questionnaire	To gain an understanding of the parent's perspective.	Mail-in 5 item questionnaire to parents
3-7. Participant Observation	To document observations and impressions of the school	Recorded impressions of researcher during site visits

4. ISSUES PRIORITIZATION PROCESS

4-1. Group Workshop #1	To clarify and prioritize environmental quality issues and concerns and establish criteria assessment.	1.5 hour workshop w/ 4-6 teachers, staff and/or parent volunteers/ school who would constitute the environmental assessment working group

5. ASSESSMENT

5-1. Survey Questionnaire	Assess the perceptions of all teachers concerning environmental quality in their school.	Take-home 60-70 item questionnaire
5-2. Group Workshop #2	To interpret and clarify results of the teacher survey questionnaire and allow for a forum to discuss possible recommendations to address problems, issues and concerns.	1.5 hour workshop w/ environmental assessment working group
5-3. Report Write-up	To report to the community the results of the assessment.	Present to School Improvement Team

6. APPLICATION/ IMPLEMENTATION

6-1. Workshop #3	Identification of processes/ procedures and solutions	1.5 hour workshop w/ environmental assessment working group
6-2. Final Case Report	An internal report for district personnel review	Present to School Improvement Team

Case Study Selection Process & Criteria for School Selection

The research process begins at the School District Headquarters. Sites to be chosen for assessment must be selected according to a series of criteria that serve the goals and objectives of the assessment. Sites chosen must then be informed and principals, administrative personnel and site improvement teams or other administrative committees must be included in the research process. These administrative groups assign an environmental assessment working group to discuss objectives of the assessment. This section will provide an outline for establishing a set of objectives for the assessment project.

Establishing Objectives

The choice of buildings to be assessed should follow a certain set of objectives. These objectives should be clearly stated in order to provide a clear direction to the assessment work.

- Identify the facility(s) to be assessed

- Why are these) particular buildings or facilities being selected for assessment?

- What are the stated objectives of the assessment?

  Objectives might include a narrow assessment of particular environmental quality goals such as indoor air quality, asbestos abatement, productivity, energy cost effectiveness, or performance. An assessment could be used to measure the performance of facility management services in relationship to occupant goals, or include a broader assessment of the total environmental quality of a place according to a broader set of goals of society, organization or individuals. The objective of the assessment may be still more global: to develop measurable benchmarks for comparison to other schools over time.

Determining Level of Analyses

This step requires the assessment team to determine the level of analyses appropriate or required. This can be done by investigating the existing correspondence, or fit between philosophy, goals and instructional strategies, and the building and places within the building designed to support those philosophy, goals and instructional strategies. A lack of correspondence, or fit may indicate a mismatch and suggests the need for assessment at the particular level of analysis: at the philosophical level, goals level, or the level of instructional strategies. This step constitutes a preliminary test of where key problems may arise in the building assessment.

- Is there correspondence between organizational philosophy, goals and instructional strategies relevant to the building?

  In other words, is the espoused philosophy for a particular organization manifesting itself through the goals and instructional strategies within the building? An example might be that a school espousing a middle school philosophy (team teaching, houses) is operating as a junior high school (departmentalized, autonomous classrooms)

- Is there correspondence between goals and the facility which serves these goals?

  Referring back to the middle school operating as a junior high, the following example illustrates a lack of correspondence between organizational goals and the facility: a middle school program (which requires clusters of classrooms off a main corridor in order to support team teaching and the concept of 'houses') being implemented in a school building originally designed as a double loaded corridor.

- Is there correspondence between instructional strategies and the places they are contained in?

  An example might be the perceived inflexibility of a self-contained classroom toward cooperative grouping within the space.

Physical Facilities Inventory

The purpose of baseline data collection is to gather preliminary data on school facility and document that data in a database format that can allow for quick retrieval. The data will provide the basis for generating questions for the next phase of the research process.

General Information

School Identification

Name of School ______________________

Address ______________________

Telephone Number ______________________

Contact Person ______________________

General Building Information

Size of Facility GSF: No. of Floors: GSF/Floor:

Age of Facility Date Built: Current Date: Facility Age:

Collected Following? Floor/site plans? Y / N Photographs of site/bldg. exterior Y / N

Photographs of bldg. interior Y / N

Functional Definition

Functional Spaces/Rooms/Areas

Functional Spaces/Rooms/Areas	Functional Space Description				
	Total SF	Storage Room	Instructional Area	Teacher Workspace	Room Finishes
Instructional					
General Classrooms					
Computer Classroom					
Library/Media Center					
Cafeteria					
Auditorium					
Gym/Multi-purpose					
Office Administration					
Principal's Office					
Administrative Offices					
Storage					
Public Support Spaces					
Toilets					
Hallways/Corridors					
Main Entrance Hall					
Other					
School Grounds					
Parking					
Playground					
Entrance Areas					
Play fields					
Other					

Physical Facilities Inventory
(Continued)

Technical Systems Description

Building System	System Type	System Description	Condition
Mechanical Heating			
Electrical			
Plumbing			
Lighting			
Security			
Structural			
Roof			
Exterior Wall			
Other			

Organizational Survey

The purpose of the baseline data collection is to gather preliminary data on the school organization. The data will provide the basis for generating questions for the next phase of the research process.

General Information

School Name
Address
Principal of School

Program Description

Official Mission Statement of School
Description of Educational Program
  (Curriculum & Instruction, Programs offered, etc.)
Master Schedules/ Class Schedules for each grade

Demographics

Instructional Staff
- Students (by grade)
- Teachers
- Teacher Aides
- Administrative Staff

Non-Instructional Staff
- Administrative Staff
- Custodial Staff
- Food Services
- Transportation Services

Educational Outcomes

(To be collected as required by the objectives of assessment)

Achievement Records (Math/Verbal)
Attendance Records
Vandalism Records
Observed Student & Teacher Behaviors
Student and Teacher Attitudes
Others

Research Questions
Interview Guide for Principals

Information gathered from a previous step on mission and organizational goals will provide the substantive issues for asking questions of principals. The purpose of these interviews will be to clarify and verify educational goals of the school. In addition, principals will be asked to provide their perception of student, teacher and parent attitudes with respect to various environmental quality issues; and to express their own attitudes of these issues as well.

Thank you for agreeing to meet with me today, and thank you also for allowing us to conduct this study of environmental quality at your school. I'm going to ask you some open-ended questions about the types of issues, problems and concerns you run up against on a day-to-day basis while managing your school. Your comments will be kept confidential. By sharing your experiences with me, you will help us understand how well the school facility meets the needs of students, teachers, parents and the community-at-large.

I'd like to ask your permission to tape record our interview. The tape will not be shared with anyone outside of the research group and comments taken from the tape will be paraphrased and confidential. The tape will help us be more accurate in representing your views later on in the research process. Do I have your permission? May I begin?

0. Background questions

I'd like to start with a personal question:

How long have you been principal at Jones Elementary School?
What formative administrative experiences do you bring to this school from other schools you have worked in?

I have a few general organizational questions:

What is the projected enrollment for this year?
How many teachers to you have on staff?
What is a typical class size? is there a range?

I would like to ask you some general questions about your school's educational mission:

Could you describe the specific mission and focus of your school?

In general terms, what educational philosophy do you follow or promote here?
prompts: team teaching, parental involvement, cooperative learning, discovery learning, etc.

How much agreement do you have on philosophy with the teaching staff as a whole?

Do you have any explicit set of achievement and developmental goals for the school?

To what extent do you feel your school has been successful in meeting these goals?

1. THE NATURE OF ENVIRONMENTAL QUALITY

Environmental quality – or the quality of the physical environment of the school – is one of the many factors affecting the educational process and a factor that is often overlooked.

Our study looks at the nature of environmental quality in the physical indoor and surrounding school setting.

Local knowledge
(1b) How do occupants[1] perceive, if at all, the nature of environmental quality in general?

We know how to define environmental quality in a forest, a factory, an office, a home, but what is it in a school? I am interested in what environmental quality means to you.

Could you describe for me what your definition of environmental quality might be?

> Prompts:
> What are some attributes that you think make for an exceptional school environment?
>
> What are some attributes that you think make for a good or bad physical setting for children or teachers?
>
> Probes:
> Could you give me a few incidents or situations to illustrate what you mean?

(1c) How do occupants perceive, if at all, the state of environmental quality in their specific school?

Using your concept of environmental quality, how would you rate the environmental quality of your school?

> Prompt: How does your school perform with respect to the aspects or attributes of quality you have identified in your definition?

Many of the aspects of environmental quality you have brought up are also mentioned in the research literature. There are a few more aspects I'd like to get your opinion on....

I will describe an attribute of environmental quality and I'd like to get your reaction to it.

Is this an appropriate or important factor to you? and why you think so?

If you have any questions as to the meaning of the terms, let me know and I can clarify.

Criteria for Environmental Quality

With each of the 14 attributes, the following general questions should be asked with regard to specific situations or instances concerning an attribute. There are four criteria for determining the level or nature of environmental quality: helpfulness, dependability, fairness and satisfaction.

Helpful/Hindrance
How did this situation help or hinder your efforts to teach children?

Dependable/Not-Dependable
How often has this situation arose?

---

[1] occupants = students, parents, teachers, administrative staff, custodial staff

Do you know of other teachers and/or classrooms who have experienced this similar problem? How did you resolve this situation? were you successful? if not, what would you recommend to resolve it?

Fair/Unfair
Do you think it is fair that you and your students had to endure this situation?

Satisfied/Not-Satisfied
How did you feel about that situation at the time? How do you feel about it now?
How satisfied are you with the outcome?
In your opinion, how important is this attribute? why?

Environmental Quality Attributes

1. Physical Safety and Security
The degree to which the physical environment of a place contributes to protecting occupants from harm, injury, or undue risk.

> What are some of the safety and security issues you have dealt with here? (unlawful entry, drugs, guns, other issues)
>
> Could you give me some examples (stories, incidents or situations) that can bring to life some of these issues for me?

2. Structural Flexibility
The degree to which the physical environment of a place can be easily changed to afford different activities.

> Has there been any situation in which there was a need to remove walls or change the configuration of the school layout to accommodate different activities? (renovations, alterations, modernizations)

3. Classroom Adaptability
The degree to which the physical environment in a place can afford many activities without restructuring.

> Have there been specific instances where you experienced problems using your classroom space effectively?
>
> (difficulties storing, retrieving, filing, or organizing student work or books and supplies? layout of your classroom furniture? floor materials? wall surfaces and display spaces? windows? group space, size)

4. Building Functionality
The degree to which the physical environment fits the organizational structure, behavior and processes with respect to size, configuration and adjacency.

> Does the layout of the building (e.g. number of floors, arrangement of rooms) fit the types of activities you and your colleagues are engaged in, or are you constantly adjusting your activities to fit the limitations of the size, configuration and location?
>
> Have there been situations where this has been an issue?

5. Places for Social Interaction & Communication (Social Places)

The degree to which a place provides opportunities for social exchange, communication and interaction.

Is the school laid out in such a way to support informal social exchange among students and teachers and between teachers?

Probes:
How well does the teacher's lounge functions a place to interact with your fellow teachers?

Do corridors and common spaces offer places for interaction among teachers and students or are they simply passageways used to get from one place in the building to another?

Are corridors used, encouraged, discouraged as places for social interaction? why?

Have there been incidents or situations where social interaction has been an problem? too much, or too little?

6. Personalization & Ownership

The degree to which occupants perceive a place as offering opportunities to create a personal and self-expressive environment, and to mark it as the property of the individual.

How do you personalize your classroom?

What opportunities do children have to personalize their spaces?

Do you and other teachers have a sense of ownership of their school? Do children?

Can you give me some special examples of places in the building that have been personalized?

7. Privacy

The degree to which a place provides opportunities for a place of seclusion from others or observation; a place where one can be free from intrusion.

Do private places exist for teachers? where? are they adequate for their needs?

Do children have places for privacy? where? If children don't have private places to go why don't they -- what is the argument against children having private places to go to get away?

Have there been incidents or situations where privacy has been an issue for teachers or children?

8. History & Meaning

The degree to which occupants perceive a place as having historical and cultural references that create a sense of the familiar and provide a sense of meaning.

Does this school have a recognizable history? a collective memory? What is the story of this school?

9. Physical Comfort & Health

The degree to which occupants perceive a place as meeting their physiological needs with respect to thermal and air quality (thermal comfort), illumination (visual comfort) and noise (auditory comfort), odors (olfactory comfort), and surfaces (tactile comfort).

Is thermal and air quality an issue at your school?

Is noise and acoustics an issue or problem here at your school?

Is lighting an issue?

Have odors ever been an issue?

10. Psychological Safety

The degree to which occupants perceive a place as ensuring no harm, injury, or undue risk from the physical environment.

This attribute of EQ is slightly different from the previous attribute (safety and security). This attribute refers to *perceptions* of safety on the part of students and teachers despite school policies and actions.

From your perspective, how safe do your teachers and students feel in school?

Have there been incidents or situations where physical safety has been an issue?

11. Sensory Stimulation

The degree to which occupants perceive a place as providing a stimulating environment for learning that is safe yet challenging.

From your perspective, how stimulating are classrooms -- that is, how bright and cheerful are they? how creative or inspiring are they for children?

Can you provide any examples in your school of sensory stimulation and its importance to children's learning?

12. Crowding /Spaciousness

The degree to which occupants perceive a place as limiting opportunities for privacy, personal control or behavioral freedom.

Are classrooms crowded? what is the range of class sizes typically in your school?

Do teachers complain of crowded conditions or have they simply gotten use to it? How do they cope? Have there been incidents or situations where crowding has been an issue?

13. Legibility, Orientation & Wayfinding

The degree to which occupants perceive a place as fostering a sense of orientation within the environment that reduces confusion and facilitates wayfinding.

How easy is it to find your way around the building?

Can visitors easily find their way?

What strategies have you used to improve wayfinding through the building?

14. Aesthetics & Appearance

The degree to which occupants perceive a place as attractive and provoking.

What are your views concerning the appearance of the building interior? and exterior?

What specific aspects of the school do you pay attention to regarding appearance? (corridors, shiny floors, exterior landscaping, paint) and why?

Do you receive comments from visitors to the school concerning its appearance?

How often have you felt the need to voice your concerns about the appearance of the building?

From your experience, has the custodial staff been responsive to your needs and concerns?

Do you have any suggestions for the custodial staff concerning the upkeep of the building that you have not previously made them aware of?

Anything you want to add that I have not addressed?
Now I'd like you to reassess your building based on this expanded list of attributes of EQ .....

1c) How do occupants perceive, if at all, the state of environmental quality in their specific school?

How do you rate the environmental quality of your school considering the attributes you feel are the most important to teaching and learning?

How might you see improving those aspects of environmental quality your school has not performed well in?

2. FACILITY MANAGEMENT AND PERCEPTIONS OF QUALITY

We mentioned (or didn't mention) facility management as a factor in maintaining environmental quality. I'd like to ask a few questions with regard to your perceptions of facility management and its role in maintaining a quality environment to teach and learn in.

Local knowledge

(3b) What do occupants see as the aspects of facility management that may have an influence on the environmental quality of the school?

Generally speaking -- what ways do you think facility management (custodial and maintenance and operations services) can contribute to environmental quality in a school ?

Which attributes do you think facility managers can influence?

(3c) What do occupants see as the aspects of facility management that may be having an influence on the environmental quality in their specific school?

Given what you have said, in general terms, how well does your facility management team maintain the environmental quality in your school?

Prompts:
What have they done, or not done that pleases or satisfies you?
What have they done or not done that concerns you?
What suggestions can you offer to your facility management staff to improve their performance?

3. SUMMARY & NEXT STEPS

Thank you for your participation. Your responses will help us in assessing and improving the quality of the school environment here.

Take-Home Worksheet
I have a take home worksheet which I would like for you to fill out which asks you to rate the aspects of environmental quality.

Take-Home Worksheet

I would like to thank-you for taking the time to interview with me today. In an effort to extend our interview discussion of environmental quality in schools, I would greatly appreciate your responses to the questions on the following worksheet pages.

Please feel free to answer them at your leisure and send your responses to me by mail in the envelope provided with this worksheet.

As stated in the Informed Consent Form:

Participants will not be identified directly. All information gathered by participants will be confidential and used anonymously. Participation is completely voluntary and participants may withdraw from the study at any time for any reason without penalty. A decision not to participate will involve no penalty or loss of benefits to which the participant is otherwise entitled; if a subject withdraws, the information gathered from that participant will be used only with the written or verbal permission of that participant.

Again, thank-you for your participation in this project.

Jeff Lackney

Name of Participant ______________________ Date ______________

1. Important Attributes of Environmental Quality

Please indicate the level of importance ([1]= very important, [2]= somewhat important, [3]= not important) of each of the following attributes of environmental quality with respect to its influence on...

Attribute of Environmental Quality	**...Student academic performance**			**...Student social development**			**...Teacher instructional performance**		
Physical Safety and Security	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Structural Flexibility	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Classroom Adaptability	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Building Functionality	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Social Interaction & Communication	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Personalization & Ownership	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Privacy	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
History & Meaning	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Physical Comfort & Health	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Psychological Safety	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Sensory Stimulation	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Crowding /Spaciousness	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Legibility, Orient. & Wayfinding	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Aesthetics & Appearance	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]

2. Student Academic Performance

Which **three** attributes from the list on the previous page do you feel are **the most important** to **student academic performance**?

____________________ ____________________ ____________________

Why did you choose the three attributes you did?

____

____

3. Social Development

Which **three** attributes from the list on the previous page do you feel are **the most important** to **student social development**?

____________________ ____________________ ____________________

Why did you choose the three attributes you did?

____

____

4. Instructional Performance

Which **three** attributes from the list on the previous page do you feel are **the most important** to **teacher instructional performance**?

____________________ ____________________ ____________________

Why did you choose the three attributes you did?

____

____

5. Facility Management

Please identify (with a check) the attributes of environmental quality that you feel your facility management team (a) **is presently addressing**, and (b) **ideally should, but is not presently addressing**, and why?

Attribute of Environmental Quality	(a) addressing	(b) not addressing	Why have you identified these particular attributes?
Physical Safety & Security			
Structural Flexibility			
Classroom Adaptability			
Building Functionality			
Social Interaction & Communication			
Personalization & Ownership			
Privacy			
History & Meaning			
Physical Comfort & Health			
Psychological Safety			
Sensory Stimulation			
Crowding /Spaciousness			
Legibility, Orient. & Wayfinding			
Aesthetics & Appearance			

6. Personal Control

Please identify (with a check) the attributes of environmental quality that you feel you (a) have **adequate control over**; and, **(b) do not have adequate control over**, and why?

Attribute of Environmental Quality	(a) **Have control**	(b) **Do not have control**	Why have you responded as you have?
Physical Safety & Security			
Structural Flexibility			
Classroom Adaptability			
Building Functionality			
Social Interaction & Communication			
Personalization & Ownership			
Privacy			
History & Meaning			
Physical Comfort & Health			
Psychological Safety			
Sensory Stimulation			
Crowding /Spaciousness			
Legibility, Orient. & Wayfinding			
Aesthetics & Appearance			

Informed Consent Form for Principals

I am Jeff Lackney, of the Department of Architecture and Urban Planning at the University of Wisconsin-Milwaukee. My colleague, Charles Brigden, and I are conducting a research project concerning how faculty, students and staff perceive the environmental quality of their schools. We would appreciate your participation in this study, as it will assist us in making recommendations for improving the environmental quality in your school and in other schools in the Baltimore City Public Schools (BCPS).

This research project will consist of a multi-site case study of five schools in BCPS. We will interview four teachers, an administrator, the head custodian, and parents from each school participating in the study. The interview will take approximately 45 minutes. In addition, we would like to survey students from each school using a short questionnaire survey to be administered by the school. Once the interview and survey process is complete, we will conduct one teacher's workshop consisting of four teachers from your school. This workshop will take approximately 90 minutes. Following the workshop and interviews, we may wish to conduct a short take-home questionnaire survey to be administered to the entire teaching staff to verify specific findings from the workshops, interviews, and student survey.

The four teachers willing to participate in this research project (as both interviewees and workshop participants) will be offered compensation of $75.00. Compensation will be awarded to teacher participants by mail with the conclusion of the final workshop or by February, 1996, which ever comes first. If a participant, for whatever reason, is unable to continue their involvement in the study, they will still be compensated in full.

Participants will not be identified directly. All information gathered by participants will be confidential and used anonymously. Participation is completely voluntary and participants may withdraw from the study at any time for any reason without penalty. A decision not to participate will involve no penalty or loss of benefits to which the participant is otherwise entitled; if a subject withdraws, the information gathered from that participant will be used only with the written or verbal permission of that participant.

Once the study is completed, we will be glad to give the results to you. In the meantime, if you have any questions, please ask us or contact:

Jeffery A. Lackney
School of Architecture and Urban Planning
University of Wisconsin-Milwaukee
Milwaukee, WI 53211
(414) 229-2591

If you have any complaints about your treatment as a participant in this study, please call or write:

Dr. Berri Forman, IRB
Institutional Review Board of the Protection of Human Subjects
Environmental Health, Safety and Risk Management
University of Wisconsin-Milwaukee
P.O. Box 413
Milwaukee, WI 53201
(414) 229-6016

Although Dr. Forman will ask you name, all complaints are kept in confidence.

I have received an explanation of the study and agree to participate. I understand that my participation in this study is strictly voluntary.

____________________________ ________________
Name Date

This research project has been approved by the University of Wisconsin-Milwaukee Institutional Review Board for the Protection of Human Subjects for a one year period.

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Jeffery A. Lackney
Department of Architecture
School of Architecture & Urban Planning
P.O. Box 413
Milwaukee, WI 53201
7/15/95

Principal Name
School Address
Baltimore City Public Schools
Baltimore, Maryland Zip Code

Dear Principal,

The University of Wisconsin-Milwaukee (UWM) and the Department of Architecture with to express their appreciation to you and your organization for allowing Jeff Lackney, Assistant Director of the Institute for Environmental Quality in Architecture, to perform scholarly research on your premises.

The researcher will require access to data necessary to conduct research for a project entitled the Environmental Quality Assessment Research Project UWM IRB Protocol No. 96-02-031).

We understand that the contact person at your organization with whom the researcher is to communicate with in regard to such access is **NAME AND ADDRESS OF CONTACT PERSON HERE**.

The researcher has agreed and been instructed to protect confidentiality of data collected so that no subject will be individually identifiable. Finally, the researcher will share a copy of a final report with your organization upon request.

If any problems and/or concerns arise regarding this project, please notify the UWM complaint person (Dr. Berri Forman, Dept. of Environmental Health, Safety and Risk Management, P.O. Box 413, Milwaukee, WI 53201).

Please sign a copy of this letter to acknowledge receipt and your understanding of the scope of the researcher's proposed activity. Return it to Jeffery A. Lackney at the address listed above.

Thank you for your cooperation.

For: ______________________
Department
By: ______________________
Authorized Signature
____
Title
____
Date

For: ______________________
Participating Organization
By: ______________________
Authorized Signature
____
Title
____
Date

For the Board of Regents of the
University of Wisconsin System
University of Wisconsin-Milwaukee
____
Authorized Signature
____
Title
____
Date

Research Questions
Interview Guide for Teachers

The purpose of these interviews is to gather preliminary information from the workshop participants concerning their attitudes and experiences with the school facility. The interviews will act as a way of introducing the researcher to the workshop participants in a non-threatening way. The types of questions asked at this stage will be based on previously raised issues concerning instructional and non-instructional organizational goals. Finally, questions will be phrased with respect to specific places in the school.

I thank you for agreeing to meet with me today. I'm going to ask you some open-ended questions about the types of issues, problems and concerns you run up against on a day-to-day basis while teaching in this building. Your comments will be kept confidential. By sharing your experiences with me, you will help us understand how well the school facility meets the needs of students, teachers, parents and the community-at-large.

I'd like to ask your permission to tape record our interview. The tape will not be shared with anyone outside of the research group and comments taken from the tape will be paraphrased and confidential. The tape will help us be more accurate in representing your views. Do I have your permission? May I begin?

(1) ACTIVITIES

I'd like to first ask you some questions about your roles, responsibilities and activities in the school:

(1.1) How long have you been a teacher here at Jones School?

(1.2) Could you describe for me your typical day at this school?
(When do you arrive, what and where are the general activities are you engaged in during the day, when do you leave the building)

(1.3) Could you describe the typical instructional tasks you are engaged in during the school day?

(1.4) Are there any other school-wide activities you are periodically engaged in that you have not mentioned?

(2) PLACES FOR LEARNING & SOCIAL DEVELOPMENT

Now, I'd like to ask you some questions related to the places in this school.

When I refer to "places," I am referring to the various spaces, areas, rooms and even locations within the school not officially named. (i.e., lounges, meeting rooms, a stairway where people meet, classroom areas, etc.)

I am interested in how places support academic learning as well as social and developmental needs:

(2.1) First, in your opinion, what are the three or four most important places in the school with respect to supporting and nurturing **academic learning** in your students?
(classroom, library/media center, cafeteria, gymnasium, auditorium, corridors, restrooms, playground, entrance area, activity pockets within classrooms, etc.)

(a) why did you mention those particular places?

(b) what makes these places important as places of learning?

(c) What kinds of learning, in the broadest sense, are nurtured in these places? (kinesthetic, emotional, cognitive, artistic expression, interpersonal relationships, self-directedness, responsibility, analysis and problem solving, and questioning, inquiry and research)

(2.2) In your opinion, what are the three or four most important places in the school with respect to supporting and nurturing **social and developmental needs** of your students?

(a) why did you mention those particular places?

(b) what makes these places positive social places?

(c) What kinds of social and developmental needs do you see being nurtured in these places? (communication skills, conflict resolution, interpersonal relationships, etc.)

(3) THE NATURE OF ENVIRONMENTAL QUALITY

Environmental quality -- or the quality of the physical environment of the school -- is one of the many factors affecting the educational process and a factor that is often overlooked.

Our study looks at the nature of environmental quality in the physical indoor and surrounding school setting.

Local knowledge
(1b) How do occupants[2] perceive, if at all, the nature of environmental quality in general?

We know how to define environmental quality in a forest, a factory, an office, a home, but what is it in a school? I am interested in what environmental quality means to you.

Could you describe for me what your definition of environmental quality might be?

Prompts:
What are some attributes that you think make for an exceptional school environment?

What are some attributes that you think make for a good or bad physical setting for children or teachers?

Probes:
Could you give me a few incidents or situations to illustrate what you mean?

(1c) How do occupants perceive, if at all, the state of environmental quality in their specific school?

Using your concept of environmental quality, how would you rate the environmental quality of your school?

Prompt: How does your school perform with respect to the aspects or attributes of quality you have identified in your definition?

---

[2] occupants = students, parents, teachers, administrative staff, custodial staff

Many of the aspects of environmental quality you have brought up are also mentioned in the research literature. There are a few more aspects I'd like to get your opinion on....

I will describe an attribute of environmental quality and I'd like to get your reaction to it.

Is this an appropriate or important factor to you? and why you think so?

If you have any questions as to the meaning of the terms, let me know and I can clarify.

Criteria for Environmental Quality

With each of the 14 attributes, the following general questions should be asked with regard to specific situations or instances concerning an attribute. There are four criteria for determining the level or nature of environmental quality: helpfulness, dependability, fairness and satisfaction. These questions address the four criteria for establishing the level of environmental quality exhibited for a particular attribute.

Helpful/Hindrance
How did this situation help or hinder your efforts to teach children?

Dependable/Not-Dependable
How often has this situation arose?
Do you know of other teachers and/or classrooms who have experienced this similar problem?
How did you resolve this situation? were you successful? if not, what would you recommend to resolve it?

Fair/Unfair
Do you think it is fair that you and your students had to endure this situation?

Satisfied/Not-Satisfied
How did you feel about that situation at the time? How do you feel about it now?
How satisfied are you with the outcome?
In your opinion, how important is this attribute? why?

Environmental Quality Attributes

1. Physical Safety and Security

The degree to which the physical environment of a place contributes to protecting occupants from harm, injury, or undue risk.

> What are some of the safety and security issues you have dealt with here? (unlawful entry, drugs, guns, other issues)
>
> Could you give me some examples (stories, incidents or situations) that can bring to life some of these issues for me?

2. Structural Flexibility

The degree to which the physical environment of a place can be easily changed to afford different activities.

> Has there been any situation in which there was a need to remove walls or change the configuration of the school layout to accommodate different activities? (renovations, alterations, modernizations)

3. Classroom Adaptability

The degree to which the physical environment in a place can afford many activities without restructuring.

Have there been specific instances where you experienced problems using your classroom space effectively?

(difficulties storing, retrieving, filing, or organizing student work or books and supplies? layout of your classroom furniture? floor materials? wall surfaces and display spaces? windows? group space, size)

4. Building Functionality

The degree to which the physical environment fits the organizational structure, behavior and processes with respect to size, configuration and adjacency.

Does the layout of the building (e.g. number of floors, arrangement of rooms) fit the types of activities you and your colleagues are engaged in, or are you constantly adjusting your activities to fit the limitations of the size, configuration and location?

Have there been situations where this has been an issue?

5. Social Places (Places for Social Interaction & Communication)

The degree to which a place provides opportunities for social exchange, communication and interaction thereby facilitating cognitive and emotional development.

Is the school laid out in such a way to support informal social exchange among students and teachers and between teachers?

Probes:
How well does the teacher's lounge functions a place to interact with your fellow teachers?

Do corridors and common spaces offer places for interaction among teachers and students or are they simply passageways used to get from one place in the building to another?

Are corridors used, encouraged, discouraged as places for social interaction? why?

Have there been incidents or situations where social interaction has been an problem? too much, or too little?

6. Personalization & Ownership

The degree to which occupants perceive a place as offering opportunities to create a personal and self-expressive environment, and to mark it as the property of the individual.

How do you personalize your classroom?

What opportunities do children have to personalize their spaces?

Do you and other teachers have a sense of ownership of their school? Do children?

Can you give me some special examples of places in the building that have been personalized?

7. Privacy

The degree to which a place provides opportunities for a place of seclusion from others or observation; a place where one can be free from intrusion.

Do private places exist for teachers? where? are they adequate for their needs?

Do children have places for privacy? where? If children don't have private places to go why don't they -- what is the argument against children having private places to go to get away?

Have there been incidents or situations where privacy has been an issue for teachers or children?

8. History & Meaning

The degree to which occupants perceive a place as having historical and cultural references that create a sense of the familiar and provide a sense of meaning.

Does this school have a recognizable history? a collective memory? What is the story of this school?

9. Physical Comfort & Health

The degree to which occupants perceive a place as meeting their physiological needs with respect to thermal and air quality (thermal comfort), illumination (visual comfort) and noise (auditory comfort), odors (olfactory comfort), and surfaces (tactile comfort).

Is thermal and air quality an issue at your school?

Is noise and acoustics an issue or problem here at your school?

Is lighting an issue?

Have odors ever been an issue?

10. Psychological Safety

The degree to which occupants perceive a place as ensuring no harm, injury, or undue risk from the physical environment.

This attribute of EQ is slightly different from the previous attribute (safety and security). This attribute refers to *perceptions* of safety on the part of students and teachers despite school policies and actions.

From your perspective, how safe do your teachers and students feel in school?

Have there been incidents or situations where physical safety has been an issue?

11. Sensory Stimulation

The degree to which occupants perceive a place as providing a stimulating environment for learning that is safe yet challenging.

From your perspective, how stimulating are classrooms -- that is, how bright and cheerful are they? how creative or inspiring are they for children?

Can you provide any examples in your school of sensory stimulation and its importance to children's learning?

12. Crowding /Spaciousness

The degree to which occupants perceive a place as limiting opportunities for privacy, personal control or behavioral freedom.

Are classrooms crowded? what is the range of class sizes typically in your school?

Do teachers complain of crowded conditions or have they simply gotten use to it? How do they cope?

Have there been incidents or situations where crowding has been an issue?

13. Legibility, Orientation & Wayfinding

The degree to which occupants perceive a place as fostering a sense of orientation within the environment that reduces confusion and facilitates wayfinding.

How easy is it to find your way around the building?

Can visitors easily find their way?

What strategies have you used to improve wayfinding through the building?

14. Aesthetics & Appearance

The degree to which occupants perceive a place as attractive and provoking.

What are your views concerning the appearance of the building interior? and exterior?

What specific aspects of the school do you pay attention to regarding appearance? (corridors, shiny floors, exterior landscaping, paint) and why?

Do you receive comments from visitors to the school concerning its appearance?

How often have you felt the need to voice your concerns about the appearance of the building?

From your experience, has the custodial staff been responsive to your needs and concerns?

Do you have any suggestions for the custodial staff concerning the upkeep of the building that you have not previously made them aware of?

Anything you want to add that I have not addressed?

Now I'd like you to reassess your building based on this expanded list of attributes of EQ .....

1c) How do occupants perceive, if at all, the state of environmental quality in their specific school?

How do you rate the environmental quality of your school considering the attributes you feel are the most important to teaching and learning?

How might you see improving those aspects of environmental quality your school has not performed well in?

SUMMARY & NEXT STEPS

Thank you for your participation. Your responses will help us in assessing and improving the quality of the school environment here.

Take-Home Worksheet

I have a take home worksheet which I would like for you to fill out which asks you to rate the aspects of environmental quality.

Workshop Participation

Our next step in the research process will be to conduct a workshop with three or four teachers from this school. The purpose of the workshop will be to help us narrow our focus on the issues and concerns you and other teachers from your school have raised concerning this school building.

The result of the workshop will be a survey questionnaire that we will administer to a larger group of teachers at your school.

As a result of our discussion here, do you feel comfortable and willing to participate in a small group 90-minute workshop with a few of your colleagues later this term?

Take-Home Worksheet

I would like to thank-you for taking the time to interview with me today. In an effort to extend our interview discussion of environmental quality in schools, I would greatly appreciate your responses to the questions on the following worksheet pages.

Please feel free to answer them at your leisure and send your responses to me by mail in the envelope provided with this worksheet.

As stated in the Informed Consent Form:

Participants will not be identified directly. All information gathered by participants will be confidential and used anonymously. Participation is completely voluntary and participants may withdraw from the study at any time for any reason without penalty. A decision not to participate will involve no penalty or loss of benefits to which the participant is otherwise entitled; if a subject withdraws, the information gathered from that participant will be used only with the written or verbal permission of that participant.

Again, thank-you for your participation in this project.

Jeff Lackney

Name of Participant ______________________ Date ____________

1. Important Attributes of Environmental Quality

Please indicate the level of importance ([1]= very important, [2]= somewhat important, [3]= not important) of each of the following attributes of environmental quality with respect to its influence on...

Attribute of Environmental Quality	...Student academic performance	...Student social development	...Teacher instructional performance
Physical Safety and Security	[1] [2] [3]	[1] [2] [3]	[1] [2] [3]
Structural Flexibility	[1] [2] [3]	[1] [2] [3]	[1] [2] [3]
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Social Interaction & Communication	[1] [2] [3]	[1] [2] [3]	[1] [2] [3]
Personalization & Ownership	[1] [2] [3]	[1] [2] [3]	[1] [2] [3]
Privacy	[1] [2] [3]	[1] [2] [3]	[1] [2] [3]
History & Meaning	[1] [2] [3]	[1] [2] [3]	[1] [2] [3]
Physical Comfort & Health	[1] [2] [3]	[1] [2] [3]	[1] [2] [3]
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Aesthetics & Appearance	[1] [2] [3]	[1] [2] [3]	[1] [2] [3]

2. Student Academic Performance

Which **three** attributes from the list on the previous page do you feel are **the most important** to **student academic performance**?

____________________   ____________________   ____________________

Why did you choose the three attributes you did?

____

____

3. Student Social Development

Which **three** attributes from the list on the previous page do you feel are **the most important** to **student social development**?

____________________   ____________________   ____________________

Why did you choose the three attributes you did?

____

____

4. Teacher Instructional Performance

Which **three** attributes from the list on the previous page do you feel are **the most important** to **teacher instructional performance**?

____________________   ____________________   ____________________

Why did you choose the three attributes you did?

____

____

5. Facility Management

Please identify (with a check) the attributes of environmental quality that you feel your facility management team **(a) is presently addressing**, and **(b) ideally should, but is not presently addressing**, and why?

Attribute of Environmental Quality	(a) addressing	(b) not addressing	Why have you identified these particular attributes?
Physical Safety & Security			
Structural Flexibility			
Classroom Adaptability			
Building Functionality			
Social Interaction & Communication			
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History & Meaning			
Physical Comfort & Health			
Psychological Safety			
Sensory Stimulation			
Crowding /Spaciousness			
Legibility, Orient. & Wayfinding			
Aesthetics & Appearance			

6. Personal Control

Please identify (with a check) the attributes of environmental quality that you feel you (a) **have adequate control over**; and, (b) **do not have adequate control over**, and why?

Attribute of Environmental Quality	(a) **Have control**	(b) **Do not have control**	Why have you responded as you have?
Physical Safety & Security			
Structural Flexibility			
Classroom Adaptability			
Building Functionality			
Places for Social Interaction			
Personalization & Ownership			
Privacy			
History & Meaning			
Physical Comfort & Health			
Psychological Safety			
Sensory Stimulation			
Crowding /Spaciousness			
Legibility, Orient. & Wayfinding			
Aesthetics & Appearance			

Informed Consent Form for Teacher Participants

I am Jeff Lackney, of the Department of Architecture and Urban Planning at the University of Wisconsin-Milwaukee. My colleague, Charles Brigden, and I are conducting a research project concerning how faculty, students and staff perceive the environmental quality of their schools. We would appreciate your participation in this study, as it will assist us in making recommendations for improving the environmental quality in your school and in other schools in the Baltimore City Public Schools (BCPS).

This research project will consist of case studies of five schools in BCPS. We will interview four teachers, an administrator, the head custodian, and parents from each school participating in the study. The interview will take approximately 45 minutes. In addition, we would like to survey students from each school using a short questionnaire survey to be administered by the school. Once the interview and survey process is complete, we will conduct one teacher's workshop consisting of four teachers from your school. This workshop will take approximately 90 minutes. Following the workshop and interviews, we may wish to conduct a short take-home questionnaire survey to be administered to the entire teaching staff to verify specific findings from the workshops, interviews, and student survey.

The four teachers willing to participate in this research project (as both interviewees and workshop participants) will be offered compensation of $75.00. Compensation will be awarded to teacher participants by mail with the conclusion of the final workshop or by February, 1996, which ever comes first. If a participant, for whatever reason, is unable to continue their involvement in the study, they will still be compensated in full.

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Once the study is completed, we will be glad to give the results to you. In the meantime, if you have any questions, please ask us or contact:

Jeffery A. Lackney
School of Architecture and Urban Planning
University of Wisconsin-Milwaukee
Milwaukee, WI 53211
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Although Dr. Forman will ask your name, all complaints are kept in confidence.

I have received an explanation of the study and agree to participate. I understand that my participation in this study is strictly voluntary.

______________________________ ______________
Name Date

This research project has been approved by the University of Wisconsin-Milwaukee Institutional Review Board for the Protection of Human Subjects for a one year period.

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Child Survey Questionnaire
Instructions to Teachers

The Environmental Quality Assessment Project
Conducted by the School of Architecture and Urban Planning
University of Wisconsin-Milwaukee

We are conducting a study that investigates the quality of your school's physical environment. We would like to get as many views on the quality of your school as we can -- *including your students.*

The purpose of the Child Survey Questionnaire is to obtain the child's perspective often left out of such evaluations of school physical environments. We believe the survey may provide some indication of the criteria by which children perceive and judge some aspects of environmental quality.

We ask, if possible, that you give your students about 10 minutes to complete this survey.

In administering this questionnaire to your students please read the following to your class:

"I would like you to answer a few questions about your school.

There are no right or wrong answers, only your feelings and opinions.

Take your time, don't rush and answer as many questions as you feel comfortable answering."

Thank-you for your participation!

Jeff Lackney
Principal Investigator

Dear Student,
We would like to ask you a few questions about your school

- *What is your favorite place in school? why?*

- *What places in your school are fun to learn in? why?*

- *What do you like most about your classroom?*

- *What don't you like about your classroom?*

Thank-you for your help!

==

Could you draw a picture of your favorite place?

==

Thank-you for your help!

Parent Survey Questionnaire

The purpose of the parent survey questionnaire is to allow the widest possible range of perspectives into the assessment. The survey may provide additional indications of the criteria by which parents and community members perceive and judge some aspects of environmental quality.

We are conducting a survey to assess the quality of the learning environment for your child. We would greatly appreciate your comments and suggestions; they will help us to continuously improve our efforts to provide your children with a safe, secure, comfortable and satisfying experience.

1. What comments does your child often make about his or her school building and playgrounds? (If your child is near by do not hesitate to ask his or her opinion)

2. What are your concerns about the school you feel the school should focus on, or be aware of?

3. How have your experiences been when you have visited the school concerning the following areas:

safety and security?

appearance?

orderliness?

cleanliness?

others...

4. Imagine, for a moment, that you are an architect designing an elementary school. What room would you put the most time and effort into if you wanted to create the greatest opportunity for learning? why?

Thank you for your participation. Your responses will help us in assessing and improving the environmental quality of the Jones school for the whole community.

Research Questions
Interview Guide for Custodians

The purpose of interviewing non-instructional staff prior to instructional staff is to gain an understanding of the types of issues, problems and concerns that students and teachers voice to others beside the researcher. This information will be useful in providing a context for questions to be asked of teachers in the next stage of data collection.

I thank you for agreeing to meet with me today. I'm going to ask you some open-ended questions about the types of issues, problems and concerns you run up against on a day-to-day basis while maintaining this school. Your comments will be kept confidential. By sharing your experiences with me, you will help us understand how well the school facility meets the needs of students, teachers, parents and the community-at-large.

I'd like to ask your permission to tape record our interview. The tape will not be shared with anyone outside of the research group and comments taken from the tape will be paraphrased and confidential. The tape will help me be more accurate in representing your views later on in the research process. Do I have your permission? May I begin?

0. Background questions

How long have you been here? What are your roles and responsibilities as part of the staff of Jones Elementary School?

In general, what are the kinds of concerns/complaints you typically respond to by teachers concerning the school facilities?

> (prompts: hot/cold, appearance, operations of equipment, furnishings, environmental controls, doors, windows, cabinets, sinks, etc.)

Could you give me a recent example of the circumstances surrounding a few of these complaints?

How are these concerns/complaints typically resolved?

> (prompts: delegate them? report them? deal with them on the spot?)

A far as you know, how many of these complaints actually get recorded and documented or logged?

Can you give me any other examples? What other types of problems do you encounter?

..... I'd like to turn, now, to the subject of environmental quality.....

1. THE NATURE OF ENVIRONMENTAL QUALITY

Our study looks at the nature environmental quality in the school setting. Environmental quality -- or the quality of the physical environment of the school -- is one of the many factors affecting the educational process and a factor that is often overlooked.

Local knowledge

(1b) How do occupants[3] perceive, if at all, the nature of environmental quality in general ?

I am interested in what environmental quality means to you -- generally.

Could you describe for me what your definition of environmental quality might be?

Probes:
What are some characteristics that you think make for an exceptional school environment?
What are some characteristics that you think make for a good or bad setting for children or teachers?
Could you give me a few incidents or situations to illustrate what you mean?

(1c) How do occupants perceive, if at all, the state of environmental quality in their specific school?

Using your definition of environmental quality, how would you rate the environmental quality of your school?

Probe: How does your school perform with respect to quality as you have defined?

I have a few more aspects of quality I'd like to get your opinion on....

I will present you with a characteristic of environmental quality and I'd like to get your reaction to it. I'm particularly interested in situations or examples from your experience of where these aspects of quality have come up. Is this an appropriate or important factor to you? and why you think so? If you have any questions concerning the meaning of the terms, let me know and I can clarify.

Environmental Quality Attributes

1. Safety and Security

The degree to which the physical environment of a place contributes to protecting occupants from harm, injury, or undue risk.

What are some of the safety and security issues you have dealt with here?
(unlawful entry, drugs, guns, other issues)

Could you give me some examples (stories, incidents or situations) that can bring to life some of these issues for me?

What are the school's policies concerning these safety and security issues?

In your opinion, how important is this attribute? why?

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[3] occupants = students, parents, teachers, administrative staff, custodial staff

5. Social Interaction & Communication

The degree to which a place provides opportunities for social exchange, communication and interaction.

Is the school laid out in such a way to support informal social exchange among students and teachers and between teachers?

Have there been incidents or situations where social interaction between students and teachers has been an problem?
Probes:
Are corridors used, encouraged, discouraged as places for social interaction? why?
Are common spaces often used as places for informal social exchange or are they simply spaces you pass through?
Do corridors offer places for interaction among teachers and students or are they simply passageways used to get from one place in the building to another?
What places in the building that lend themselves to useful informal interaction? (administrative lobby, common spaces, corridors, bathrooms)

In your opinion, how important is this attribute?

6. Personalization & Ownership

The degree to which occupants perceive a place as offering opportunities to create a personal and self-expressive environment, and to mark it as the property of the individual.

Do teachers and children have a sense of ownership of their school overall?

How do teachers personalize their classrooms?

What opportunities do children have to personalize their spaces?

Can you give me some special examples of places in the building that have been personalized?

In your opinion, how important is this attribute? why?

7. Privacy

The degree to which a place provides opportunities for a place of seclusion from others or observation; a place where one can be free from intrusion.

From your experience here, has there been incidents or situations where the need for privacy has been an issue for teachers and/or children? (prompt: to get away from the children)

Do private places exist for teachers? where? are they adequate for their needs?

Do children have places for privacy? where?

If children don't have private places to go why don't they -- what is the argument against children having private places to go to get away?

In your opinion, how important is this attribute? why?

8. History/Meaning

The degree to which occupants perceive a place as having historical and cultural references that create a sense of the familiar and provide a sense of meaning.

Do you know the story of this school? How it came to be, its history?

What kind of meanings does this school have for your personally?

How important is this attribute? why?

9. Physical Comfort & Health

The degree to which occupants perceive a place as meeting their physiological needs with respect to thermal and air quality (thermal comfort), illumination (visual comfort) and noise (auditory comfort), odors (olfactory comfort), and surfaces (tactile comfort).

Is thermal and air quality an issue here?

Is noise and acoustics an issue or problem here at your school? How was it resolved?

Is lighting an issue? How was it resolved?

Have odors ever been an issue?

How important is this attribute? why?

10. Physical Safety

The degree to which occupants perceive a place as ensuring no harm, injury, or undue risk from the physical environment.

This attribute of EQ is slightly different from the previous attribute (safety and security). This attribute refers to *perceptions* of safety on the part of students and teachers despite school policies and actions.

From your perspective, how safe do your teachers and students feel in school?

Have there been incidents or situations where physical safety has been an issue?

How important is this attribute? why?

11. Sensory Stimulation

The degree to which occupants perceive a place as providing a stimulating environment for learning that is safe yet challenging.

From your perspective, as you walk through the classrooms in the building, how stimulating are classrooms -- that is, how bright and cheerful are they? how creative or inspiring are they for children?

Can you provide any examples in your school of sensory stimulation and its importance to children's learning?

In your opinion, how important is this attribute? Why?

12. Crowding /Spaciousness

The degree to which occupants perceive a place as limiting opportunities for privacy, personal control or behavioral freedom.

Do teachers complain of crowded conditions or have they simply gotten use to it?
How do they cope?

Are classrooms crowded? what is the range of class sizes typically in your schoo!?

Have there been particular incidents or situations where crowding has been an issue?

How important is this attribute?

13. Legibility, Orientation & Wayfinding

The degree to which occupants perceive a place as fostering a sense of orientation within the environment that reduces confusion and facilitates wayfinding.

Can visitors easily find their way through the building?

What strategies have you used to improve wayfinding through the building?

How important is this attribute? why?

14. Aesthetics & Appearance

The degree to which occupants perceive a place as attractive and provoking.

Do you receive comments from visitors to the school concerning its appearance?

What specific aspects of the school do you pay attention to regarding appearance? (corridors, shiny floors, exterior landscaping, paint) and why?

How important is this attribute? why?

3. FACILITY MANAGEMENT AND PERCEPTIONS OF QUALITY

I'd like to ask a few questions with regard to your perceptions of facility management and its role in maintaining a quality environment to teach and learn in.

Local knowledge

(3b) What do occupants see as the aspects of facility management that may have an influence on the environmental quality of the school?

Generally speaking -- what ways do you think facility management (custodial and maintenance and operations services) contributes to environmental quality in a school?

Which characteristics of quality do you think facility managers can influence?

(3c) What do occupants see as the aspects of facility management that may be having an influence on the environmental quality in their specific school?

Can you describe for me some examples or instances of when you felt you had an opportunity to contribute to the "improvement of environmental quality" of this school?

Informed Consent Form for Custodial Staff

I am Jeff Lackney, of the Department of Architecture and Urban Planning at the University of Wisconsin-Milwaukee. My colleague, Charles Brigden, and I are conducting a research project concerning how occupants of schools perceive the environmental quality of their schools. We would appreciate your participation in this study, as it will assist us in making recommendations for improving the environmental quality in your school and in other schools in the Baltimore City Public Schools (BCPS).

This research project will consist of a multi-site case study of four schools in BCPS. We will interview four teachers, an administrator, the head custodian, and parents from each school participating in the study. The interview will take approximately 45 minutes. In addition, we would like to survey students from each school using a short questionnaire survey to be administered by the school. Once the interview and survey process is complete, we will conduct one teacher's workshop consisting of four teachers from your school. This workshop will take approximately 90 minutes. Following the workshop and interviews, we may wish to conduct a short take-home questionnaire survey to be administered to the entire teaching staff to verify specific findings from the workshops, interviews, and student survey.

Participants will not be identified directly. All information gathered by participants will be confidential and used anonymously. Participation is completely voluntary and participants may withdraw from the study at any time for any reason without penalty. A decision not to participate will involve no penalty or loss of benefits to which the participant is otherwise entitled; if a subject withdraws, the information gathered from that participant will be used only with the written or verbal permission of that participant.

Once the study is completed, we will be glad to give the results to you. In the meantime, if you have any questions, please ask us or contact:

Jeffery A. Lackney
School of Architecture and Urban Planning
University of Wisconsin-Milwaukee
Milwaukee, WI 53211
(414) 229-2591

If you have any complaints about your treatment as a participant in this study, please call or write:

Dr. Berri Forman, IRB
Institutional Review Board of the Protection of Human Subjects
Environmental Health, Safety and Risk Management
University of Wisconsin-Milwaukee
P.O. Box 413
Milwaukee, WI 53201
(414) 229-6016

Although Dr. Forman will ask you name, all complaints are kept in confidence.

I have received an explanation of the study and agree to participate. I understand that my participation in this study is strictly voluntary.

Name ____________________ Date __________

This research project has been approved by the University of Wisconsin-Milwaukee Institutional Review Board for the Protection of Human Subjects for a one year period.

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Group Workshop #1

The first three phases have all been divergent phases. The goal of the next phases will be to converge the data and issues on those aspects of environmental quality that are salient to individuals and the organization. The purpose of the workshop will be to prioritize the issues for consideration and to use the results of this workshop to develop a survey questionnaire to be distributed to a larger sample of teachers within each school.

Part I: Introductions (5 minutes)

I would like to thank you for agreeing to meet for this workshop today.

The total time of the workshop will be 90 minutes. The workshop will be broken into 5 parts:

1. Introduction (5 min.),
2. Presentation of Preliminary Results (10 min.),
3. Discussion (35 min.),
4. Prioritization (30 min.) and
5. Evaluation (5 min.), Final Remarks (5 min.).

We have gathered information from several interviews with yourselves, students, parents, staff and administration. We have compiled the results and would like to share them with you.

The purpose of this workshop is to:
1. get your reactions to these results, and
2. to have you prioritize the issues and concerns most salient to you as a group.

Our research team will use the results of this workshop to develop a refined survey questionnaire to be distributed to a larger group of teachers within each school.

I'd like to ask your permission to tape record our interview. The tape will not be shared with anyone outside of the research group and comments taken from the tape will be paraphrased and anonymous. Do I have your collective permission? May I begin?

Part II: Presentation of Preliminary Results (10 minutes)

At this point, the results of the principal's, custodial, teachers' interviews and child and parent surveys will be summarized.

Part III: Discussion (35 minutes)

This part of the workshop will consist of a series of questions I will pose to you concerning the results. The purpose of this part is to gather further clarification from you about what the data means from our various perspectives and to discover the degree of agreement on each issue. May I begin?

Part IV: Prioritization (30 minutes)

This part of the workshop will consist of a series of silent voting on each of the issues raised in the previous two parts.

Part V: Evaluation (5 minutes)

This final part consists of the group will assess the degree of success of, and discuss ways to improve the workshop process.

Part VI. Closing Remarks (5 minutes)

Thank you all for participating in the workshop. I would appreciate it if you could participate in a final workshop in a few months to review the results of the wider teacher survey questionnaire. If you are interested please let me know so that I can schedule the follow-up workshop. If you would like to receive a copy of the final report please let me know.

Teacher Survey Questionnaire

This survey questionnaire is designed to illicit reactions from a wider sample of the teacher population of the school. The questionnaire is intended to be the result of the most salient issues, concerns and questions related to environmental quality identified by all the workshop participants across all schools in the study.

This instrument will be the primary tool for assessing other schools in the district. The tool may be transferred to other districts, however, it is advised that each school district tailor their survey questionnaire to the needs and concerns of that district as a whole by completing a similar action research process represented by the previous steps.

This survey is the final phase of the Environmental Quality Assessment Project. We expect that the completion of this survey will take 15-20 minutes.

The objective of this study is to understand how physical environmental quality contributes to the educational process. Concurrently, we are interested in identifying aspects of environmental quality that are of concern in your school.

Prior to this survey, we interviewed your principal and four teachers, the head custodian, and your parent liaison. In addition, we asked the classroom teachers to have their students draw pictures of their favorite places in the school and tell us why they liked them. Finally, we conducted a workshop with these same teachers and your principal to determine possible issues or concerns within the school's environment.

By responding to this survey you are consenting to participate in this study.

Participants will not be directly identified. All statements or information gathered from participants will be confidential, and will be reported in the aggregate only. Once the study is completed, we will be glad to share the results with you.

It is our sincere hope that through our work with you on this project we succeed in supporting your school's on-going efforts toward improvement.

Jeff Lackney
Principal Investigator
School of Architecture & Urban Planning
University of Wisconsin-Milwaukee

1. SAFETY AND SECURITY

***SAFETY & SECURITY** refers to the degree to which you feel the school building contributes to protecting occupants from harm, injury, or undue risk.* Specific issues related to...**Safety** might include slippery floors, unsafe playground equipment, emergency lighting, child safety in parking lots...**Security** might include poor outdoor lighting, unlawful entry of intruders, drugs, weapons, stolen items, or surveillance.

Please **circle** the single most appropriate response to each question asked below.

[1] **How frequently** do SAFETY & SECURITY issues occur?	Daily	Weekly	Monthly	Yearly	Never
[2] Do you feel that the manner in which SAFETY & SECURITY concerns have been dealt with at your school have been **fair or unfair to teachers and students**?	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
[3] To what degree do you feel you have **control** over your personal SAFETY at your school?	Complete Control	Significant Control	Some Control	Little Control	No Control
[4] Have SAFETY & SECURITY concerns **helped** or **hindered** the efforts of your school to provide a safe environment for teaching and learning?	Very Helpful	Somewhat Helpful	Neutral	Somewhat Hindering	Very Hindering
[5] Overall, how **pleased or disappointed** are you in the extent to which SAFETY & SECURITY concerns have been addressed?	Very Pleased	Somewhat Pleased	Neutral	Somewhat Disappointed	Very Disappointed
[6] **How important** do you think SAFETY & SECURITY is in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
(b) **increasing student achievement**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant

[7] **Additional comments?**

2. BUILDING FUNCTIONALITY

***BUILDING FUNCTIONALITY** refers to the degree to which you feel the various places within the school building are functionally compatible with your school's educational programs and activities.* Specific issues related to building functionality might include problems with conducting cooperative learning in open instructional space, adequacy of space size and configuration of classrooms, assembly spaces or other spaces within the school.

Please **circle** the single most appropriate response to each question asked below.

[1] **How frequently** do you encounter issues of BUILDING FUNCTIONALITY?	Daily	Weekly	Monthly	Yearly	Never
[2] Do you feel that problems of BUILDING FUNCTIONALITY have been **fair or unfair to teachers and students**?	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
[3] To what degree do you feel you have **control** over the BUILDING FUNCTIONALITY in the school?	Complete Control	Significant Control	Some Control	Little Control	No Control
[4] Have BUILDING FUNCTIONALITY concerns **helped or hindered** the efforts of your school to provide an effective environment for teaching and learning?	Very Helpful	Somewhat Helpful	Neutral	Somewhat Hindering	Very Hindering
[5] Overall, how **pleased or disappointed** are you in the extent to which BUILDING FUNCTIONALITY concerns have been addressed at your school?	Very Pleased	Somewhat Pleased	Neutral	Somewhat Disappointed	Very Disappointed
[6] **How important** do you think BUILDING FUNCTIONALITY is in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate?**	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
(b) **increasing student achievement**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant

[7] **Additional comments?**

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3. CLASSROOM ADAPTABILITY

CLASSROOM ADAPTABILITY refers to the degree to which you feel that the physical classroom space can be adapted to different and desired educational activities and functions. Specific issues related to Classroom Adaptability might include the inability to accommodate different furniture arrangements, inadequate room for instructional needs, problems with book, supply, student and personal storage, not enough display space, structural obstructions, etc.

Please **circle** the single most appropriate response to each question asked.

[1] **How frequently** do you experience CLASSROOM ADAPTABILITY as a hindrance to your efforts?	Daily	Weekly	Monthly	Yearly	Never
[2] Do you feel that concerns related to CLASSROOM ADAPTABILITY have been **fair or unfair to teachers and students**?	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
[3] To what degree do you feel you have **control** over the ADAPTABILITY of your classroom?	Complete Control	Significant Control	Some Control	Little Control	No Control
[4] Have the ADAPTABILITY concerns you experience within your classroom **helped or hindered** your efforts to provide an effective environment for teaching and learning?	Very Helpful	Somewhat Helpful	Neutral	Somewhat Hindering	Very Hindering
[5] Overall, how **pleased or disappointed** are you in the extent to which your classroom is ADAPTABLE?	Very Pleased	Somewhat Pleased	Neutral	Somewhat Disappointed	Very Disappointed
[6] **How important** do you think CLASSROOM ADAPTABILITY is in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate?**	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
(b) **increasing student achievement**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant

[7] **Additional comments?**

4. PLACES FOR SOCIAL INTERACTION (SOCIAL PLACES)

***SOCIAL PLACES** refers to the degree to which you feel that places within the school building provide opportunities for meaningful social exchange and interaction.* Specific issues related to **SOCIAL PLACES** might include classrooms that do not provide opportunities for small group instruction, places in the school that promote informal social exchange such as a lobbies, hallways, restrooms, and playgrounds, etc.

Please **circle** the single most appropriate response to each question asked.

[1] **How frequently** are concerns over SOCIAL PLACES an issue at your school?	Daily	Weekly	Monthly	Yearly	Never
[2] Do you feel that the quality of SOCIAL PLACES within your school are					
(a) **fair or unfair to teachers?**	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
(b) **fair or unfair to students?**	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
[3] To what degree do you feel you have **control** over SOCIAL PLACES in your school?	Complete Control	Significant Control	Some Control	Little Control	No Control
[4] Have SOCIAL PLACES **helped or hindered** the efforts of your school to provide a safe environment for teaching and learning?	Very Helpful	Somewhat Helpful	Neutral	Somewhat Hindering	Very Hindering
[5] Overall, how **pleased or disappointed** are you in the extent to which opportunities for SOCIAL PLACES have been provided at your school?	Very Pleased	Somewhat Pleased	Neutral	Somewhat Disappointed	Very Disappointed
[6] **How important** do you think SOCIAL PLACES are in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
(b) **increasing student achievement**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant

[7] **Additional comments?**

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5. PERSONALIZATION & OWNERSHIP

***PERSONALIZATION & OWNERSHIP** refers to the degree to which you feel the school building offers opportunities to create a personal and self-expressive environment and engender a sense of ownership.* Specific issues related to **personalization and ownership** might include student work displays, ability of individual students to personalize desks and work areas, personal lockers, personalization of classrooms by teachers, parental volunteerism, neighborhood residents respect school grounds, etc.

Please **circle** the single most appropriate response to each question asked.

[1] **How frequently** are issues pertaining to PERSONALIZATION & OWNERSHIP discussed at your school?	Daily	Weekly	Monthly	Yearly	Never
[2] Do you feel that the opportunities for PERSONALIZATION & OWNERSHIP within your school are					
(a) **fair or unfair to teachers?**	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
(b) **fair or unfair to students**?	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
[3] To what degree do you feel you have **control** over the PERSONALIZATION & OWNERSHIP of your classroom and school overall?	Complete Control	Significant Control	Some Control	Little Control	No Control
[4] Have PERSONALIZATION & OWNERSHIP issues **helped or hindered** the efforts of your school to provide an effective environment for teaching and learning?	Very Helpful	Somewhat Helpful	Neutral	Somewhat Hindering	Very Hindering
[5] Overall, how **pleased or disappointed** are you in the extent to which PERSONALIZATION & OWNERSHIP concerns have been addressed at your school?	Very Pleased	Somewhat Pleased	Neutral	Somewhat Disappointed	Very Disappointed
[6] **How important** do you think PERSONALIZATION & OWNERSHIP is in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
(b) **increasing student achievement**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant

[7] **Additional comments?**

6. PRIVACY

***PRIVACY** refers to the degree to which you feel that there are places within the school building which provide opportunities for an individual or a small group to be free from the intrusion of others.* Specific issues related to **privacy** might include the availability of places to have private conversation, to be alone for a short moment to collect your thoughts, and/or places for students to be alone for a few minutes.

Please **circle** the single most appropriate response to each question asked.

[1] **How frequently** are concerns for PRIVACY at issue in your school?	Daily	Weekly	Monthly	Yearly	Never
[2] Do you feel that the opportunities for PRIVACY within your school are					
(a) **fair or unfair to teachers**?	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
(b) **fair or unfair to students**?	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
[3] To what degree do you feel you have **control** over your PRIVACY?	Complete Control	Significant Control	Some Control	Little Control	No Control
[4] Have PRIVACY concerns **helped or hindered** the efforts of your school to provide a effective environment for teaching and learning?	Very Helpful	Somewhat Helpful	Neutral	Somewhat Hindering	Very Hindering
[5] Overall, how **pleased or disappointed** are you in the extent to which PRIVACY concerns have been addressed?	Very Pleased	Somewhat Pleased	Neutral	Somewhat Disappointed	Very Disappointed
[6] **How important** do you think PRIVACY is in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate?**	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
(b) **increasing student achievement**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant

[7] **Additional comments?**

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7. PHYSICAL COMFORT & HEALTH

***PHYSICAL COMFORT & HEALTH** refers to the degree to which you feel the indoor environment meets your physiological needs with respect to thermal and air quality, illumination, noise and odors.* Specific issues related to **physical comfort and health** might include classrooms that are either too hot or too cold, inadequately circulated air, lighting quality, acoustic and noise issues and unpleasant odors.

Please **circle** the single most appropriate response to each question asked.

[1] **How frequently** do concerns of PHYSICAL COMFORT & HEALTH arise at your school?	Daily	Weekly	Monthly	Yearly	Never
[2] Do you feel that the manner in which PHYSICAL COMFORT & HEALTH concerns have been dealt with at your school **have been fair or unfair to teachers and students**?	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
[3] To what degree do you feel you have **control** over PHYSICAL COMFORT & HEALTH issues at the school?	Complete Control	Significant Control	Some Control	Little Control	No Control
[4] Have PHYSICAL COMFORT & HEALTH concerns you have identified above **helped** or **hindered** the efforts of your school to provide a safe environment for learning?	Very Helpful	Somewhat Helpful	Neutral	Somewhat Hindering	Very Hindering
[5] Overall, how **pleased or disappointed** are you to the extent to which PHYSICAL COMFORT & HEALTH concerns have been addressed at your school?	Very Pleased	Somewhat Pleased	Neutral	Somewhat Disappointed	Very Disappointed
[6] **How important** is PHYSICAL COMFORT & HEALTH in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate?**	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
(b) **increasing student achievement**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant

[7] **Additional comments?**

8. SENSORY STIMULATION

***SENSORY STIMULATION** refers to the degree to which you feel the school building provides a stimulating environment for learning that is safe yet challenging.* Specific issues related to **sensory stimulation** might include brightness and cheerfulness of classrooms, hallways, assembly spaces, inspiring and creative wall displays, visually exciting learning spaces, a variety of textural changes and colors, etc.

Please **circle** the single most appropriate response to each question asked.

[1] **How frequently** are issues of SENSORY STIMULATION a concern at your school?	Daily	Weekly	Monthly	Yearly	Never
[2] Do you feel that the concerns for SENSORY STIMULATION have been **fair or unfair to teachers and students**?	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
[3] To what degree do you feel you have **control** over SENSORY STIMULATION in your classroom and school overall?	Complete Control	Significant Control	Some Control	Little Control	No Control
[4] Have SENSORY STIMULATION concerns **helped or hindered** the efforts of your school in providing a safe environment for learning?	Very Helpful	Somewhat Helpful	Neutral	Somewhat Hindering	Very Hindering
[5] Overall, how **pleased or disappointed** are you in the extent to which SENSORY STIMULATION concerns have been addressed at your school?	Very Pleased	Somewhat Pleased	Neutral	Somewhat Disappointed	Very Disappointed
[6] **How important** is SENSORY STIMULATION in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
(b) **increasing student achievement**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant

[7] **Additional comments**?

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9. CROWDING/SPACIOUSNESS

***CROWDING/SPACIOUSNESS** refers to the degree to which you feel the school building cannot adequately accommodate the number of students and teaching staff occupying it.* Specific issues related to **crowding/spaciousness** might include problems with overcrowding in classrooms, congested hallways, lobbies, administrative offices and other spaces in the school building.

Please **circle** the single most appropriate response to each question asked.

[1] **How frequently** is CROWDING/ SPACIOUSNESS an issue at your school?	Daily	Weekly	Monthly	Yearly	Never
[2] Do you feel that the manner in which CROWDING/SPACIOUSNESS concerns have been dealt with at your school have been **fair** or **unfair to teachers and students**?	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
[3] To what degree do you feel you have **control** over the CROWDING/ SPACIOUSNESS at the school?	Complete Control	Significant Control	Some Control	Little Control	No Control
[4] Have CROWDING/ SPACIOUSNESS concerns you have identified above **helped or hindered** the efforts of your school to provide a safe environment for learning?	Very Helpful	Somewhat Helpful	Neutral	Somewhat Hindering	Very Hindering
[5] Overall, how **pleased or disappointed** are you in the extent to which CROWDING/ SPACIOUSNESS concerns have been addressed at your school?	Very Pleased	Somewhat Pleased	Neutral	Somewhat Disappointed	Very Disappointed
[6] **How important** is CROWDING/ SPACIOUSNESS in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
(b) **increasing student achievement**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant

[7] **Additional comments?**

10. AESTHETICS & APPEARANCE

***AESTHETICS & APPEARANCE** refers to the degree to which you feel the school building is attractive and provoking.* Specific issues related to **aesthetics & appearance** might include the appearance and upkeep of the exterior of the building, the visual appearance of the building entrance and lobbies to visitors, cleanliness of floor, wall and ceiling surfaces, the orderliness and cleanliness of classrooms, etc.

Please **circle** the single most appropriate response to each question asked.

[1] **How frequently** do concerns with AESTHETICS & APPEARANCE arise at your school?	Daily	Weekly	Monthly	Yearly	Never
[2] Do you feel that the manner in which AESTHETICS & APPEARANCE concerns have been dealt with at your school have been **fair or unfair to teachers and students**?	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
[3] To what degree do you feel you have **control** over the AESTHETICS & APPEARANCE of the school?	Complete Control	Significant Control	Some Control	Little Control	No Control
[4] Have AESTHETICS & APPEARANCE CONCERNS you have identified above **helped or hindered** the efforts of your school to provide a safe environment for learning?	Very Helpful	Somewhat Helpful	Neutral	Somewhat Hindering	Very Hindering
[5] Overall, how **pleased or disappointed** are you in the extent to which AESTHETICS & APPEARANCE concerns have been adequately addressed at your school?	Very Pleased	Somewhat Pleased	Neutral	Somewhat Disappointed	Very Disappointed
[6] **How important** is AESTHETICS & APPEARANCE in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
(b) **increasing student achievement**?	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant

[7] **Additional comments?**

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Group Workshop #2

This workshop will consist of interpreting the findings from the survey and beginning the process of developing recommendations for action to improve environmental quality in the schools being assessed.

Part I: Introductions (5 minutes)

I would like to thank you for agreeing to meet for our final workshop today. The total time of the workshop will be once again 90 minutes. The workshop will be broken into 5 parts:

1. Introduction (5 min.),
2. Presentation of Preliminary Results (10 min.),
3. Discussion (35 min.),
4. Recommendations (30 min.) and Evaluation (5 min.),
5. Final Remarks (5 min.)

We have gathered information from the teacher survey questionnaire. We have compiled the results and would like to share it with you.

The purpose of this workshop is to:
1. get your reactions to these results, and
2. to have you consider recommended actions that might be taken to improve the environmental quality conditions within the school.

Our research team will use the results of this workshop to develop a final report to be publicly distributed.

I'd like to ask your permission to tape record our interview. The tape will not be shared with anyone outside of the research group and comments taken from the tape will be paraphrased and anonymous. Do I have your collective permission? May I begin?

Part II: Presentation of Survey Results (10 minutes)

At this point, the results of the principal's, custodial, teachers' interviews and child and parent surveys will be summarized.

Part III: Discussion (35 minutes)

This part of the workshop will consist of a series of questions I will pose to you concerning the results. The purpose of this part is to gather further clarification from you about what the data means from your perspective and to discover the degree of agreement on each issue. May I begin?

Part IV: Recommendations (30 minutes)

This part of the workshop will consist of a series of silent voting on each of the issues raised in the previous two parts.

Part V: Evaluation (15 minutes)

This final part consists of the group assessing the degree of success of the workshop process.

Group Workshop #3

The final workshop will consist of developing more detailed recommendations for action to improve environmental quality in the schools being assessed. The content of the workshops will be summarized and a final report will be developed that summarizes all the results of the study and the findings and interpretations of the working groups.

The objective of this final part is to apply the knowledge gained during the evaluation to improve the environmental quality of the places evaluated. Problems are fed back into the processes that can best address those problems. The final step calls for addressing the continuous improvement of the assessment procedure itself.

Part I: Identify nature of problems

From the previous step, a series of environmental concerns, issues and problems has emerged. These problems can be categorized or classified as either problems of knowledge, design or implementation. From this classification, it will be easier to identify change agents to help address the problem.

- Which problems are due to problems of knowledge?
- Which problems are due to problems of design?
- Which problems are due to problems of implementation?
- Which problems are due to problems of operations?

Part II: Identify processes to address prioritized issues

This part of the workshop identifies the process by which particular problems or issues can be resolved.

- Which problems could be solved through increasing the knowledge of occupants or facility managers toward these problem/issue? How?
- Which problems/issues could be solved through improving operations and management procedures? How?
- Which problems could be solved through redesign and construction? How?
- Which problems could be solved by engaging the regulatory process? How?

Part III: Evaluating effectiveness of procedure

- Have all places been assessed, and if so, has all relevant data been collected?
- Are there problems with the scope of the project which have surfaced? If so, what are they and how might the scope be revised to accommodate/address these problems?
- Are there problems with the manner in which problems have been categorized and assigned to a particular process?
- If so, what are they and how might this procedure be revised to accommodate/address these problems?
- What was the most valuable part of this procedure for the school?

APPENDIX A
Attributes of Environmental Quality

1. Physical Comfort & Health

Physical Comfort and Health refers to the degree to which occupants feel the indoor environment meets their physiological needs with respect to thermal and air quality, illumination, noise and odors.

Issues and Concerns Raised

The Physical Comfort and Health is the most often discussed environmental quality of concern in the study. According to most teachers, physical comfort and health concerns are experienced either daily (32%), weekly (37%), or monthly (22%). The following is a list of physical comfort and health issues that were identified by working groups. Each issue is ranked by the number of schools mentioning that issue. (Schools identifying a particular issue are noted in parentheses).

- poor air flow and ventilation are seen as potentially contributing to many health-related problems in the school (25, 31, 138, 142)
- noise and distraction problems are seen as either a low or moderate priority in open instructional areas (25, 31, 138, 142)
- cold zones in air-conditioned buildings are of constant concern (31, 138, 142)
- poor bathroom ventilation, due primarily from ineffectively operating ceiling fans, is causing some minor odor concerns (138, 142)
- old carpeting, especially at lower grade levels where students sit on the floor, is seen as a health concern (31, 32)
- excessive heat in the months from May through September is a concern for the one school without central air-conditioning (32)
- acoustic problems in bathrooms and corridors may be due to an over abundance of hard surface materials and the absence of sound absorbing materials such as acoustical ceiling tile and carpeting (32)
- concern over the scope of custodial responsibilities with respect to cleaning classroom counters (32)
- plumbing and drainage system has on a few occasions failed to prevent first floor flooding causing a potential health risk (142)

Survey Findings

Although most teachers surveyed feel they have little to no control (65%) over the physical comfort and health concerns at their school, and despite the feeling that physical comfort and health concerns have been somewhat hindering (44%) in providing an effective environment for teaching and learning, teachers feel that the manner in which physical comfort and health concerns have been dealt with at their schools has been somewhat fair (45%). Overall, only 26% of teachers indicated they were somewhat to very disappointed with respect to how physical comfort and health concerns have been addressed. An majority of teachers feel that physical comfort and health is very important (65%), in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and very important (56%) in supporting the goal of increasing Student Academic Performance.

Table: Survey Findings for Physical Comfort & Health

[1] **How frequently** do concerns of PHYSICAL COMFORT & HEALTH arise at your school?	Daily 33%	Weekly 37%	Monthly 22%	Yearly 0%	Never 7%
[2] Do you feel that the manner in which PHYSICAL COMFORT & HEALTH concerns have been dealt with at your school have been **fair or unfair to teachers and students**?	Fair 7%	Somewhat Fair 52%	Neutral 15%	Somewhat Unfair 22%	Unfair 4%
[3] To what degree do you feel you have **control** over PHYSICAL COMFORT & HEALTH issues at the school?	Complete Control 0%	Significant Control 8%	Some Control 27%	Little Control 38%	No Control 27%
[4] Have PHYSICAL COMFORT & HEALTH concerns you have identified above **helped or hindered** the efforts of your school to provide a safe environment for learning?	Very Helpful 11%	Somewhat Helpful 19%	Neutral 26%	Somewhat Hindering 44%	Very Hindering 0%
[5] Overall, how **pleased or disappointed** are you to the extent to which PHYSICAL COMFORT & HEALTH concerns have been addressed at your school?	Very Pleased 15%	Somewhat Pleased 22%	Neutral 37%	Somewhat Disappoint. 22%	Very Disappoint. 4%
[6] **How important** is PHYSICAL COMFORT & HEALTH in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate?**	Very Important 65%	Somewhat Important 26%	Neutral 4%	Somewhat Unimportant 4%	Very Unimportant 0%
(b) **increasing student achievement**?	Very Important 56%	Somewhat Important 37%	Neutral 4%	Somewhat Unimportant 4%	Very Unimportant 0%

Links to Educational Outcomes and Goals

Student Academic Performance

Physical Comfort and Health, in particular, concerns over thermal comfort, air flow, ventilation, and noise is perceived to impact Student Academic Performance.

- Thermal comfort can be of real concern especially during periods when tests are being conducted. Students are often unable to concentrate as easily on tasks. (25, 31, 32, 138, 142)

- Poor air flow circulation and ventilation were the main causes of concern for all schools. Even when the few operable second floor windows are opened, very little fresh air can be effectively circulated. These conditions may be contributing to air borne bacteria causing many health-related problems which may in turn have the potential of influencing student attitudes, mood, and ultimately performance through lost instructional time. (25, 31, 32, 138, 142)

- Problems with noise in open space instructional areas is identified by the working group as a moderate priority that could have some influence on Student Academic Performance by continually distracting students from their work.(25, 138, 142)

- Concerns for lack of ventilation have kept one teacher from conducting science projects in his instructional area, hindering potential curricular choices that could impact Student Academic Performance.(142)

Student Social Development

Physical Comfort and Health concerns, in particular, thermal comfort, air flow, ventilation and noise is perceived to impact Student Social Development.

- Teachers indicated that when students do not have the thermal comfort they need they become less interested in socializing and more interested in just surviving the heat or the cold. Some students withdrawal, while others become disruptive. (25, 31, 32, 138, 142)

- Poor air flow circulation and ventilation were the main causes of concern for all schools as well. Even when the few operable second floor windows are opened, very little fresh air can be effectively circulated. These conditions may be contributing to air borne bacteria causing many health-related problems which may in turn have the potential of influencing student attitudes and behavior and ultimately opportunities for positive social development. (25, 31, 32, 138, 142)

- Problems with noise in open space instructional areas is identified by the working group as moderate priority that could have some influence on the social development of students by continually distracting students from interaction with their immediate group. (25, 138, 142)

Teacher Instructional Performance

Physical Comfort and Health concerns, in particular, thermal comfort, air flow and noise, is perceived to impact Teacher Instructional Performance.

- At times, the lack of thermal comfort can affect a teacher's attitude, mood and motivation to instruct, thereby affecting their performance. (25, 31, 32, 138, 142)

- Poor air flow circulation and ventilation were the main causes of concern for all schools. Even when the few operable second floor windows are opened, very little fresh air can be effectively circulated. These conditions may be contributing to air borne bacteria causing many health-related problems which may in turn have the potential of influencing Teacher Instructional Performance lost instructional time. (25, 31, 32, 138, 142)

- Problems with noise in open space instructional areas are identified by the working group as moderate priority that could have some influence on Teacher Instructional Performance. Constant distractions from neighboring classes can affected teacher mood and attitudes thereby affecting instructional performance. (25, 142)

2. Classroom Adaptability

Classroom Adaptability refers to the degree to which occupants feel that the physical classroom space can be adapted to different and desired educational activities and functions.

Issues and Concerns Raised

Fifty-percent of teachers responding to the survey indicated they are having problems with issues of classroom adaptability. Teachers experience problems on either a daily (14%), weekly (25%), or monthly (11%) basis. The following is a list of classroom adaptability issues identified. Each issue is ranked by the number of schools mentioning that issue. (Schools identifying a particular issue are noted in parentheses).

- concerns over the effectiveness and adaptability of open plan versus self-contained classrooms (25, 142)
- computer installation and other problems limit classroom adaptability (32, 142)
- the need for additional storage space options (25)
- size and number of classroom tables seen as limiting options for self-contained classroom layout (32)
- inability to hang displays from concrete block walls limits available wall space (32)
- the need for additional electrical outlets in classrooms (31)
- difficulty conducting inter-class projects (32)
- problems with cooperative learning instruction in self-contained classrooms (32)

Survey Findings

An equal percentage of teachers feel they have little control over the classroom adaptability at their school as do those who feel they have significant control. However, only 38% of teachers feel that the manner in which classroom adaptability concerns have been dealt with at their schools has been fair or somewhat fair, as well as somewhat to very helpful (30%) in providing an effective environment for teaching and learning. Overall, 50% of teachers are somewhat to very pleased with how classroom adaptability concerns have been addressed at their school. A slight majority of teachers feel that classroom adaptability is either very important (52%), or somewhat important (34%) in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and either very important (55%), or somewhat important (31%) in supporting the goal of increasing Student Academic Performance.

Links to Educational Outcomes and Goals

One task of the workshop was to identify with more specificity the classroom adaptability issues that may influence three educational outcomes:
Student Academic Performance

Classroom Adaptability, in particular, concerns over both open plan and self-contained classrooms and technological adaptability, is perceived to impact Student Academic Performance.

- Open plan instructional areas are seen as having an affect on Student Academic Performance. The open plan arrangement, the working groups argued, causes problems with noise and distractions from other classes that tend to break students' concentration. (25, 31, 138, 142).

Table: Survey Findings for Classroom Adaptability

[1] **How frequently** do you experience CLASSROOM ADAPTABILITY as a hindrance to your efforts?	Daily 14%	Weekly 25%	Monthly 11%	Yearly 7%	Never 43%
[2] Do you feel that concerns related to CLASSROOM ADAPTABILITY have been **fair or unfair to teachers and students**?	Fair 21%	Somewhat Fair 17%	Neutral 34%	Somewhat Unfair 24%	Unfair 3%
[3] To what degree do you feel you have **control** over the ADAPTABILITY of your classroom?	Complete Control 10%	Significant Control 24%	Some Control 31%	Little Control 24%	No Control 10%
[4] Have the ADAPTABILITY concerns you experience within your classroom **helped or hindered** your efforts to provide an effective environment for teaching and learning?	Very Helpful 10%	Somewhat Helpful 20%	Neutral 47%	Somewhat Hindering 23%	Very Hindering 0%
[5] Overall, how **pleased or disappointed** are you in the extent to which your classroom is ADAPTABLE?	Very Pleased 21%	Somewhat Pleased 29%	Neutral 14%	Somewhat Disappoint. 32%	Very Disappoint. 4%
[6] **How important** do you think CLASSROOM ADAPTABILITY is in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate?**	Very Important 54%	Somewhat Important 25%	Neutral 21%	Somewhat Unimportant 0%	Very Unimportant 0%
(b) **increasing student achievement?**	Very Important 50%	Somewhat Important 29%	Neutral 18%	Somewhat Unimportant 4%	Very Unimportant 0%

- One working group feels that the availability of electrical outlets and lack of wire cable runs for future computer installation may influence classroom adaptability thereby potentially affecting Student Academic Performance. (31)

- The requirement to use tables for cooperative learning takes up more room than the chairs once did. The inefficient layout and installation of new classroom computers in a few rooms take up even more space. The tightness of space and of working groups does not provide students, at times, with enough of a work surface to do their work creating distractions and affecting the quality of their work. (32)Student Social Development

Classroom Adaptability, in particular, concerns over open plan and self-contained classrooms is perceived to impact Student Social Development.

- Open plan instructional areas are seen as having an affect on Student Social Development. Managing class activities in an open space in a manner sensitive to other classes, limits the range of behavior and activities that can take place, such as music, dance, and other activities requiring movement of tables and chairs in the classroom. (25, 31, 138, 142).

- The requirement to use tables for cooperative learning take up more room than the chairs once did. The inefficient layout and installation of new classroom computers in a few

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rooms that take up even more space. The tightness of space and of working groups does not provide students at times with enough of a work surface to do their work creating distractions and affecting the effectiveness of their work. (32)

Teacher Instructional Performance

Classroom Adaptability concerns, in particular, the design and adaptability of both open plan and self-contained classrooms, and technological adaptability, and available display and storage space, is perceived to impact Teacher Instructional Performance.

- Open plan instructional areas were seen as having an affect on Teacher Instructional Performance. In much the same way as with students, teachers are constantly distracted from noises and movement from other classes around them. These distractions can decrease, to some degree the effectiveness of their instruction. In addition, open instructional areas do not have enough wall space or chalkboard space. Some teachers compensate for the lack of wall space by hang posters from the ceiling, or placing displays over semi-transparent windows. (25, 31, 138, 142).

- Instituting a cooperative learning philosophy into the existing self-contained classrooms was seen as a welcome albeit challenging change for teachers with respect to classroom adaptability. A few teachers see these changes limit classroom flexibility impacting their instructional performance . All desks were replaced by classroom tables causing problems with the flexibility of classroom space: desks were seen by some teachers as providing more flexibility than bigger tables which took up the majority of classroom space. The classroom table issue impacted the ability of teachers in some cases to effectively conduct cooperative learning exercises that at times required free movement which is obviously difficult to do in a room occupied by tables. (32)

- There was some concern over the installation of the computers that resulted in a limited use of valuable bulletin board space in several classrooms. It appeared to the working group that the computers could be organized in such as way to limit the amount of direct wall space they occupied by grouping them back to back. This issue was seen as potentially affecting instructional performance. (32)

- Teachers mentioned wall hanging problems in warm weather as being one problem that often affected their instructional performance by forcing them to take time out of their planning to re-hang visuals, posters and student artwork. (32)

- Although teachers feel they have adequate storage, it is just not properly organized or managed as well as it could be. As a result, it is hard to conduct an inventory of books and supplies and there is no room for additional storage needs. Books and supplies stored in open instructional areas are routinely stolen or misplaced. (142)

3. Safety & Security

Safety and Security refers to the degree to which occupants feel the school building contributes to protecting occupants from harm, injury, or undue risk.

Issues and Concerns Raised

Most teachers indicated they experienced safety and security problems on a regular basis. No respondent claimed to never having experienced a safety and security concern. According to teachers, safety and security issues occur most often on a weekly (33%) or monthly (41%) basis. Of all the ten attributes of environmental quality, Safety and Security was the most often mentioned high priority concern for all five schools. The following are a list of safety and security issues identified. Each issue is ranked by the number of schools mentioning that issue. (Schools identifying a particular issue are noted in parentheses).

- concerns over neighborhood quality seen as compromising school safety and security (25, 31, 32, 138, 142)
- unsafe playgrounds and playground equipment contribute to safety problems (25, 31, 32, 138, 142)
- concerns over intruders and securing multiple points of entry (31, 32, 138, 142)
- poor outdoor lighting near parking lots encourage safety and security problems (25, 31)
- psychological safety on the building grounds (25, 138)
- child safety with parking lot vehicular traffic (32, 142)
- locked and semi-transparent windows increase security, but compromise visibility and daylight (32, 142)
- lack of garbage pick-up around dumpsters contributes to safety problems for students who play in the area (32, 138)
- inadequate emergency lighting in stairwells a safety risk (31)
- deterioration and lack of maintenance of city alley behind school a safety concern (25, 32)
- poor upkeep of grounds seen as a potential safety concern (31, 138)
- congested main stair during arrivals and dismissal may compromise safety (138)

Survey Findings

Despite the relatively high perceived frequency of safety and security issues, most teachers feel they have some control (55%) over their personal safety at their school. In addition, 69% of teachers feel that the manner in which safety and security concerns have been addressed have been fair to somewhat fair, as well as somewhat helpful (41%) in providing a safe environment for teaching and learning. Overall, 50% teachers are somewhat to very pleased with how safety and security concerns have been addressed at their school. A majority of teachers surveyed feel that safety and security is very important (72%) in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and very important (64%) in supporting the goal of increasing Student Academic Performance.

Table: Survey Findings for Safety & Security

[1] **How frequently** do SAFETY & SECURITY issues occur?	Daily 11%	Weekly 33%	Monthly 41%	Yearly 15%	Never 0%
[2] Do you feel that the manner in which SAFETY & SECURITY concerns have been dealt with at your school have been **fair or unfair to teachers and students**?	Fair 38%	Somewhat Fair 31%	Neutral 10%	Somewhat Unfair 21%	Unfair 0%
[3] To what degree do you feel you have **control** over your personal SAFETY at your school?	Complete Control 3%	Significant Control 21%	Some Control 55%	Little Control 21%	No Control 0%
[4] Have SAFETY & SECURITY concerns **helped or hindered** the efforts of your school to provide a safe environment for teaching and learning?	Very Helpful 15%	Somewhat Helpful 41%	Neutral 33%	Somewhat Hindering 11%	Very Hindering 0%
[5] Overall, how **pleased or disappointed** are you in the extent to which SAFETY & SECURITY concerns have been addressed?	Very Pleased 10%	Somewhat Pleased 40%	Neutral 27%	Somewhat Disappoint. 23%	Very Disappoint. 0%
[6] **How important** do you think SAFETY & SECURITY is in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate**?	Very Important 72%	Somewhat Important 21%	Neutral 7%	Somewhat Unimportant 0%	Very Unimportant 0%
(b) **increasing student achievement**?	Very Important 64%	Somewhat Important 18%	Neutral 14%	Somewhat Unimportant 4%	Very Unimportant 0%

Links to Educational Outcomes and Goals

One task of the workshop was to identify with more specificity the safety and security issues that may influence three educational outcomes:

Student Academic Performance

Safety and Security concerns, in particular, concerns over poor neighborhood quality, feelings of safety on building grounds, and safety from intruders, is perceived to impact Student Academic Performance.

- Safety and security as represented by the issues of poor neighborhood quality and psychological safety on school building grounds, is seen by teachers to potentially affect Student Academic Performance as illustrated by their students' preoccupation with problems at home which take time away from focused school work. (25, 31, 32, 138, 142)

- Teachers in the working group are well aware of the implications of safety and security problems on the ability of students to focus on learning. Due to recent incidents the custodian has established a new policy to lock the main entrance doors very soon after classes start and again directly after dismissal. The students' awareness of these incidents further contributes to an inability to focus on the their work. (31)

Student Social Development

Safety and Security concerns, in particular, poor neighborhood quality, lack of safe places to play, feelings of safety, and safety from intruders,is perceived to impact Student Social Development.

- Student Social Development was perceived by teachers to be affected by poor neighborhood quality as illustrated by in-school fighting, the result of social behavior learned at home or in the community subsequently brought into the school.(25, 31, 32, 138, 142)

- Safety on the playground is interpreted by the working group to hinder possibilities for Student Social Development, in that the deteriorating conditions of the playground and equipment do not as easily support teachers' attempts at organizing constructive play, thereby creating more reluctance on the part of the teacher to have students play on the grounds. Playground safety has also been seen as a high-priority problem. As is a problem at many Baltimore City schools, the playground has not been updated since the school's original construction. Outdated metal pipe "jungle gym" playground equipment has slowly degraded to the point of being extremely unsafe. (25, 31, 32, 138, 142)

- The presence of vehicular traffic is seen as potentially inhibiting social development of students through the limited opportunities for safe places to play. (31, 142)

- Teachers in the working group are well aware of the implications of intruders on the social development of their students. Students are aware of the defensive stance the school must take with regard to visitors and intruders. Due to recent incidents the custodian has established a new policy to lock the main entrance doors very soon after classes start and again directly after dismissal. (31)

Teacher Instructional Performance

Safety and Security concerns, in particular, concerns over poor neighborhood quality, feelings of safety, safety from intruders, and the securing of personal belongings, is perceived to impact Teacher Instructional Performance.

- Due to poor neighborhood quality, an ever-present undercurrent of anxiety is created in the minds of many teachers. Perceived psychological safety on building grounds can have an affect on teachers' attitudes and moods. Bad experiences teachers bring into the school can adversely affect their ability to focus on the task of teaching.(25, 31, 32, 138, 142)

- The physical state of the school and its grounds can also have an affect on Teacher Instructional Performance. Locked and frosted windows constantly remind teachers of the surroundings. Stories of past intruders remind teachers of the lack of control they have at times even within the building. Although teachers feel psychologically safe within the building and often claim to be habituated to the situation, an ever present concern for their safety and the safety of their students pervades their day and is every so often heightened by new events that may impact them directly. These feelings, they argue, indirectly affect their performance by distracting them from their immediate task of teaching. (25, 31, 32, 138, 142)

- Although recent steps have been taken by the school to cut down on intruders, teachers in the working group are very aware of the intruder safety problem on their ability to focus on the instructional need of their students.(31, 138)

- Security concerns over teachers' locked storage is believed to serve as a distracter on a teacher's ability to focus on instruction. Teachers should not have to worry about whether his or her personal belongings are secure or not. (31, 32, 138, 142)

4. Building Functionality

Building Functionality refers to the degree to which occupants feel the various places within the school building are functionally compatible with the school's educational programs and activities.

Issues and Concerns Raised

Sixty-four percent of teachers experience problems with building functionality. Most teachers encounter building functionality issues daily (25%) and weekly (21%). The following is a list of building functionality issues identified. Each issue is ranked by the number of schools mentioning that issue. (Schools identifying a particular issue are noted in parentheses).

- ADA Accessibility (Americans With Disability Act) (25, 31, 32, 138)
- lack of both playground equipment and an adequate tot lot area are seen as limiting functional use of the building grounds (138)
- congestion in the main stair during morning arrivals and dismissals compromises efficient circulation and movement (138)
- an underutilized library/media center limits effective building functionality (142)
- problems with parents finding way to child's classroom may be a consequence of unclear functional layouts and signage (142)
- unorganized central storage room limits functionality (142)
- crowded administrative area not functional (142)
- inadequate lobby design creates some functional problems (142)
- mismatch between community school vision and facility layout (142)
- teachers' lounge (31)
- cafeteria/auditorium divider partition in disrepair (31)
- lack of assembly space severely limits for school-wide activities (142)

Survey Findings

Most teachers feel they have little or no control (69%) over the building functionality at their school. In addition, only 41% of teachers responding to the survey feel that the manner in which building functionality concerns have been dealt with have been fair to somewhat fair, as well as somewhat to very hindering (38%) in providing an effective environment for teaching and learning. Overall, only 31% of teachers are somewhat to very pleased with how building functionality concerns have been addressed. A majority of teachers feel that building functionality is either very important (52%), or somewhat important (34%) in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and either very important (55%), or somewhat important (31%) in supporting the goal of increasing Student Academic Performance.

Table: Survey Findings for Building Functionality

[1] **How frequently** do you encounter issues of BUILDING FUNCTIONALITY?	Daily 25%	Weekly 21%	Monthly 11%	Yearly 7%	Never 36%
[2] Do you feel that problems of BUILDING FUNCTIONALITY have been **fair or unfair to teachers and students**?	Fair 24%	Somewhat Fair 17%	Neutral 34%	Somewhat Unfair 17%	Unfair 7%
[3] To what degree do you feel you have **control** over the BUILDING FUNCTIONALITY in the school?	Complete Control 3%	Significant Control 7%	Some Control 21%	Little Control 28%	No Control 41%
[4] Have BUILDING FUNCTIONALITY concerns **helped or hindered** the efforts of your school to provide an effective environment for teaching and learning?	Very Helpful 4%	Somewhat Helpful 18%	Neutral 43%	Somewhat Hindering 32%	Very Hindering 4%
[5] Overall, how **pleased or disappointed** are you in the extent to which BUILDING FUNCTIONALITY concerns have been addressed at your school?	Very Pleased 10%	Somewhat Pleased 21%	Neutral 52%	Somewhat Disappoint. 17%	Very Disappoint. 0%
[6] **How important** do you think BUILDING FUNCTIONALITY is in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate**?	Very Important 52%	Somewhat Important 34%	Neutral 14%	Somewhat Unimportant 0%	Very Unimportant 0%
(b) **increasing student achievement**?	Very Important 55%	Somewhat Important 31%	Neutral 10%	Somewhat Unimportant 1%	Very Unimportant 0%

Links to Educational Outcomes and Goals

One task of the workshop was to identify with more specificity the building functionality issues that may influence three educational outcomes:

Student Academic Performance

Building Functionality concerns, in particular, concerns over handicapped accessibility and mismatches between building layout and educational programs, is perceived to impact Student Academic Performance.

- Concerning the issue of ADA Accessibility, several of the working groups reasoned that although they did not have an physically disabled students, if they were to have one, accessibility issues might affect that student's ability to use the entire facility, thus affecting that student's performance. (25, 31, 32, 138, 142)
- Currently, mismatches between building functionality and organizational activities in one school are perceived by teachers to be affecting Student Academic Performance. Instructional space has been occupied by various outside agencies limiting the size and thus the functional effectiveness of many open space instructional areas.(142)

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Student Social Development

Building Functionality concerns, in particular, handicapped accessibility, lack of adequately equipped outdoor playareas, and space for school-wide assemblies, is perceived to impact Student Social Development.

- Concerning the issue of ADA Accessibility, several the working groups reasoned that although they did not have an physically disabled students, if they were to have one, accessibility issues might affect that student's ability to use the entire facility. Due to limited access to the school building, a physically disabled student would not able to participate in all the activities of the school, thereby limiting his or her social development. (25, 31, 32, 138).

- The playground is interpreted by the working group as inadequately functioning to support teachers' efforts to organize constructive outdoor play, limiting opportunities for Student Social Development. (142)

- Currently, mismatches between building functionality and organizational activities in one school are perceived by teachers to be affecting social development. (142)

- The lack of space for school-wide assemblies limits opportunities for quality social interchange between a larger group of students, teachers and the community. (142)

Teacher Instructional Performance

Building Functionality concerns, in particular, concerns over mismatches between building layout and educational programs, is perceived to impact Teacher Instructional Performance.

- Currently, mismatches between building functionality and organizational activities in one school are perceived by teachers to be affecting their own performance. Due to the influx of outside community agencies in the school, created as a result of a community school vision, open-plan instructional space has been compromised decreasing the availability of space for instruction. (142)

- Teachers feel their performance suffers when supportive instructional spaces have not been managed well: they must cope with an abandoned library/media center, unorganized centralized storage rooms, a crowded administration area, and directing lost parents who cannot find their student's classroom.(142)

5. Aesthetics & Appearance

Aesthetics & Appearance refers to the degree to which occupants feel the school building is attractive and provoking.

Issues and Concerns Raised

Sixty-nine percent of teachers responding to the survey claim to experience concerns over aesthetics and appearance of their school. The frequency of experience is broad ranging from daily to weekly (30%) and monthly to yearly (38%). The following is a list of classroom adaptability issues identified. Each issue is ranked by the number of schools mentioning that issue. (Schools identifying a particular issue are noted in parentheses).

- the appearance of existing playgrounds is of concern (25, 31, 32, 138, 142)
- semi-transparent windows are seen as unsightly (25, 31, 32, 138, 142)
- the upkeep of the grounds was a concern (25, 31, 138)
- concerns over the appearance of the neighboring property and city alley (25, 32, 138)
- old carpeting is seen as hindering the appearance of the school (31)

Although not of concern, the following issues were discussed:

- the interior of the school is perceived as clean and orderly (25, 31, 32, 138)
- interest in landscape projects as a way to improve the appearance of the grounds considered (142)

Survey Findings

Seventy-three percent of teachers feel they have some to significant control over the aesthetics and appearance concerns at their school. Supporting this finding is that the same 73% of teachers feel that the manner in which aesthetics and appearance concerns have been dealt with have been fair to somewhat fair, as well as very to somewhat helpful (62%) in providing an effective environment for teaching and learning. Overall, 77% of teachers are very to somewhat pleased with how aesthetics and appearance concerns have been addressed. A majority of teachers feel that aesthetics and appearance is either very important (64%), or somewhat important (32%) in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and either very important (56%), or somewhat important (30%) in supporting the goal of increasing Student Academic Performance.

Table: Survey Findings for Aesthetics & Appearance

[1] **How frequently** do concerns with AESTHETICS & APPEARANCE arise at your school?	Daily 15%	Weekly 15%	Monthly 19%	Yearly 19%	Never 31%
[2] Do you feel that the manner in which AESTHETICS & APPEARANCE concerns have been dealt with at your school have been **fair or unfair to teachers and students**?	Fair 46%	Somewhat Fair 27%	Neutral 23%	Somewhat Unfair 4%	Unfair 0%
[3] To what degree do you feel you have **control** over the AESTHETICS & APPEARANCE of the school?	Complete Control 4%	Significant Control 27%	Some Control 46%	Little Control 23%	No Control 0%
[4] Have AESTHETICS & APPEARANCE CONCERNS you have identified above **helped or hindered** the efforts of your school to provide a safe environment for learning?	Very Helpful 31%	Somewhat Helpful 31%	Neutral 35%	Somewhat Hindering 4%	Very Hindering 0%
[5] Overall, how **pleased or disappointed** are you in the extent to which AESTHETICS & APPEARANCE concerns have been adequately addressed at your school?	Very Pleased 42%	Somewhat Pleased 35%	Neutral 19%	Somewhat Disappoint. 4%	Very Disappoint. 0%
[6] **How important** is AESTHETICS & APPEARANCE in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate**?	Very Important 64%	Somewhat Important 32%	Neutral 4%	Somewhat Unimportant 0%	Very Unimportant 0%
(b) **increasing student achievement**?	Very Important 56%	Somewhat Important 30%	Neutral 11%	Somewhat Unimportant 4%	Very Unimportant 0%

Links to Educational Outcomes and Goals

Student Academic Performance

Aesthetics & Appearance concerns, in particular, a school's cleanliness, orderliness and character, is perceived to impact student academic performance.

- The school building was perceived as influencing students' impressions of the school. Clean and shiny floors, fluorescent light strips that brightly shine without flickering, displays that are orderly and colorful, these are the symbols of a school that is on a progressive track toward excellence. The quality of aesthetics and appearance is perceived as instilling cultural awareness and pride in students. Maintaining a positive appearance of the building reinforces positive atmosphere students to learn in. (25, 31, 32, 138, 142)

Student Social Development

Aesthetics and Appearance concerns, in particular, a school's cleanliness, orderliness and character, is perceived to impact Student Social Development.

- The appearance of the school, it's cleanliness, orderliness and character are believed by some teachers to influence Student Social Development. The school building was perceived as influencing occupant and visitors' first impressions of the school. To teachers, a clean school equals an orderly school. Clean and shiny floors, fluorescent light strips that brightly shine without flickering, displays that are orderly and colorful, these are the symbols of a school that is on a progressive track toward excellence. The quality of aesthetics and appearance is perceived as instilling cultural awareness and pride in students as well as visitors to the school. Maintaining a positive appearance of the building reinforces personalization and ownership for not only its occupants, but for the community as well. (25, 31, 32, 138, 142)

- The poor appearance of the building grounds and lack of visually attractive playground equipment in all schools in the study are seen by some working groups as having an influence on students' social development.(25, 31, 32, 138, 142)

Teacher Instructional Performance

Aesthetics and Appearance concerns, in particular, a school's cleanliness, orderliness and character, is perceived to impact Teacher Instructional Performance.

- The appearance of the school, it's cleanliness, orderliness and character are believed by some teachers to their own performance. A clean and orderly school that eliminates visual distractions as well as providing bright and cheerful surroundings can motivate teachers to teach. As one teacher stated, "An appealing school makes [the] school inviting, and a place you want to be." (25, 31, 32, 138, 142)

6. Personalization & Ownership

Personalization and Ownership refers to the degree to which occupants feel the school building offers opportunities to create a personal and self-expressive environment and engender a sense of ownership.

Issues and Concerns Raised

As many as 77% of teachers experience problems over personalization and ownership concerns in their school. Most often concerns over personalization and ownership are experienced either weekly (23%) or monthly (35%). The following is a list of the personalization and ownership issues identified.

- within the school, teachers provide many opportunities for students to personalize their classrooms and corridor displays (25, 31, 32, 138, 142)
- lack of neighborhood quality, playground safety, and upkeep of grounds are all seen as reflecting a poor sense of ownership of the school grounds on the part of the community (25, 31, 138)
- lack of personal space for students can limit opportunities for personalization (32, 138, 142)
- sharing lockers with other students limits opportunities for personalization and ownership (138, 142)
- although difficult to maintain, landscaping projects are seen as providing an increased ownership of the school grounds by students (138, 142)
- providing signs of academic unity are seen as strengthening a sense of school ownership in students (142)

Survey Findings

Most teachers feel they have significant control (52%) over the personalization and ownership concerns at their school. Additionally, 67% of teachers feel that the manner in which personalization and ownership concerns have been addressed have been fair to somewhat fair, as well as very to somewhat helpful (62%) in providing an effective environment for teaching and learning. Overall, teachers pleasure or dissatisfaction range from very to somewhat pleased (59%) with how personalization and ownership concerns have been addressed. A majority of teachers feel that personalization and ownership is either very important (38%), or somewhat important (38%) in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and either very important (36%), or somewhat important (36%) in supporting the goal of increasing Student Academic Performance.Links to Educational Outcomes and Goals

Table: Survey Findings for Personalization & Ownership

[1] **How frequently** are issues pertaining to PERSONALIZATION & OWNERSHIP discussed at your school?	Daily 4%	Weekly 23%	Monthly 35%	Yearly 15%	Never 23%
[2] Do you feel that the opportunities for PERSONALIZATION & OWNERSHIP within your school are					
(a) **fair or unfair to teachers?**	Fair 48%	Somewhat Fair 17%	Neutral 24%	Somewhat Unfair 10%	Unfair 0%
(b) **fair or unfair to students?**	Fair 41%	Somewhat Fair 28%	Neutral 24%	Somewhat Unfair 7%	Unfair 0%
[3] To what degree do you feel you have **control** over the PERSONALIZATION & OWNERSHIP of your classroom and school overall?	Complete Control 7%	Significant Control 52%	Some Control 28%	Little Control 10%	No Control 3%
[4] Have PERSONALIZATION & OWNERSHIP issues **helped or hindered** the efforts of your school to provide an effective environment for teaching and learning?	Very Helpful 31%	Somewhat Helpful 31%	Neutral 31%	Somewhat Hindering 7%	Very Hindering 0%
[5] Overall, how **pleased or disappointed** are you in the extent to which PERSONALIZATION & OWNERSHIP concerns have been addressed at your school?	Very Pleased 21%	Somewhat Pleased 38%	Neutral 28%	Somewhat Disappoint. 10%	Very Disappoint. 3%
[6] **How important** do you think PERSONALIZATION & OWNERSHIP is in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate?**	Very Important 38%	Somewhat Important 38%	Neutral 21%	Somewhat Unimportant 3%	Very Unimportant 0%
(b) **increasing student achievement?**	Very Important 36%	Somewhat Important 36%	Neutral 29%	Somewhat Unimportant 0%	Very Unimportant 0%

Links to Educational Outcomes and Goals

Student Academic Performance

Personalization and Ownership concerns, in particular, encouraging ownership of school grounds, as well as providing opportunities for self-expression within the school, is perceived to impact Student Academic Performance.

- The lack of neighborhood quality illustrated by lack of ownership of the school grounds is seen as potentially affecting student attitudes and behavior that may hinder their performance. Evidence of this lack of ownership confronts students and teachers alike everyday: garbage, broken bottles, graffiti and other paraphernalia are strewn across the school site. (25, 31, 32, 138, 142)

- Within the school however, teachers and students are capable of personalizing their space and have gained a strong sense of ownership in their school. Students learn the importance of taking responsibility for their actions. These attitudes, according to working groups, eventually influence their academic performance as well. (25, 31, 32, 138, 142)

Student Social Development

Personalization and Ownership concerns, in particular, encouraging ownership of school grounds, as well as providing opportunities self-expression within the school, is perceived to impact Student Social Development.

- The lack of neighborhood quality illustrated by lack of ownership of the school grounds is seen as potentially affecting student attitudes and behavior that may hinder social development. (25, 31, 32, 138, 142)

- Within the school however, teachers and students are capable of personalizing their space and have gained a strong sense of ownership in their school. Students learn the importance of taking responsibility by sharing in classroom clean-up routines, helping with the hanging of wall displays, being involved in landscaping projects and other similar group activities outside of more formal instruction. (25, 31, 32, 138, 142)

- Students have few ways to personalize their area, as they may have been able to do when they had their own desk. The teachers try to compensate by placing students' work on the walls of the classroom and in the hallways of the school thereby instilling a sense of personalization and ownership on a larger scale (i.e., 'this is my classroom, this is my school'). (25, 31, 32, 138, 142)

- Where personalization and ownership qualities are clearly in view is at the main entrance lobby of each school. It is here where the life of the school is visually expressed with an abundance of slogans on the walls, posters announcing events, and flyers littered on waiting tables. (25, 31, 32, 138, 142)

- Teachers often personalize their instructional areas even though at first glance each area appears to have common features similar to others in the pod. Within guidelines established by teachers, there is evidence students have opportunities to personalize as well as take ownership in their instructional area. (25, 138)

- Within the school, teachers provide many opportunities for students to personalize their classrooms by displaying student work, and to take ownership of their school through participation in the Safeties, Plant Brigade, and other school service-related tasks.(31)

Teacher Instructional Performance

Personalization and Ownership concerns, in particular, encouraging ownership of school grounds, as well as providing opportunities for self-expression within the school, is perceived to impact Teacher Instructional Performance.

- The lack of neighborhood quality illustrated by lack of ownership of the school grounds is seen as potentially affecting attitudes and behavior that may hinder Teacher Instructional Performance. (25)

- Teachers often personalize their instructional areas even though at first glance each area appears to have common features similar to others in the pod.(25)

7. Places for Social Interaction (Social Places)

Social Places (Places for Social Interaction) refers to the degree to which occupants feel that places within the school building provide opportunities for meaningful social exchange and interaction.

Issues and Concerns Raised

Fifty-nine percent of teachers responding to the survey indicated that they never experience any concerns over social places in the school. Only 26% of teachers experience problems on a weekly or monthly basis.
The quality of social places was one of the perceived qualities that garnered the least attention. One possible reason for this is that the entire school promotes continuous social interaction and therefore is never recognized as an issue by occupants.
The following is a list of social place issues identified.

- playground safety concerns seen as limiting opportunities for social interaction (25, 31, 32, 138, 142)
- entrance lobby effectively provides opportunities for social encounters and demonstrates the spirited personality of the school (25, 31, 32, 138, 142)
- inadequate size of classroom tables hinders constructive social interaction for older students (32)
- inadequate teachers' lounge discourages use and therefore, opportunities for informal contact with peers (31)
- centralized Commons acts as a true community forum providing many opportunities for informal social encounters (25)
- location of Parent Academy adjacent to the entrance lobby provides further opportunities for social exchange (32)
- underutilized library/media area at the center of the school a lost opportunity as a space to support social interaction (142)

Survey Findings

Although teachers claim not to experience any social place concerns, over half of teachers (53%) indicate they have little to no control over the use of social places in the school. If addition, while 52% of teachers feel that the manner in which concerns for social places have been dealt with at their schools has been fair to somewhat fair, only 37% of teachers feel that concerns over social places that have been dealt with have been somewhat to very helpful in providing an effective environment for teaching and learning. Overall, 42% of teachers are somewhat to very pleased with how concerns over social places have been addressed at their school. A majority of teachers feel that social places are either very important (52%), or somewhat important (34%) in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and either very important (55%), or somewhat important (31%) in supporting the goal of increasing Student Academic Performance.

Table: Survey Findings for Places for Social Interaction

[1] **How frequently** are concerns over SOCIAL PLACES an issue at your school?	Daily 7%	Weekly 11%	Monthly 15%	Yearly 7%	Never 59%
[2] Do you feel that the quality of SOCIAL PLACES within your school are					
(a) **fair or unfair to teachers?**	Fair 37%	Somewhat Fair 15%	Neutral 30%	Somewhat Unfair 19%	Unfair 0%
(b) **fair or unfair to students?**	Fair 35%	Somewhat Fair 15%	Neutral 27%	Somewhat Unfair 23%	Unfair 0%
[3] To what degree do you feel you have **control** over SOCIAL PLACES in your school?	Complete Control 7%	Significant Control 19%	Some Control 22%	Little Control 30%	No Control 22%
[4] Have SOCIAL PLACES **helped or hindered** the efforts of your school to provide a safe environment for teaching and learning?	Very Helpful 7%	Somewhat Helpful 30%	Neutral 52%	Somewhat Hindering 7%	Very Hindering 4%
[5] Overall, how **pleased or disappointed** are you in the extent to which opportunities for SOCIAL PLACES have been provided at your school?	Very Pleased 70%	Somewhat Pleased 37%	Neutral 37%	Somewhat Disappoint. 15%	Very Disappoint. 4%
[6] **How important** do you think SOCIAL PLACES are in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate**?	Very Important 26%	Somewhat Important 48%	Neutral 22%	Somewhat Unimportant 4%	Very Unimportant 0%
(b) **increasing student achievement**?	Very Important 26%	Somewhat Important 48%	Neutral 19%	Somewhat Unimportant 7%	Very Unimportant 0%

Links to Educational Outcomes and Goals

Student Academic Performance

Places for Social Interaction, in particular, concerns over table groupings, is perceived to impact Student Academic Performance.

- The majority of students and teachers are isolated in self-contained classrooms. Within the classroom, most of the social activity takes place at the classroom tables (#6) which often may be a hindrance to desired learning behaviors. On the other hand, classroom tables can support desired cooperative learning behaviors. To some teachers in the working group, however, these tables were seen as a hindrance to Student Academic Performance. The interplay of factors contributing to this perception include the age of the student, or their close proximity to one another at tables. (Tables intended for four or six are often shared by eight.) (32)

Student Social Development

Places for Social Interaction, in particular, concerns over adequate management of playgrounds and cafeterias and providing opportunities for informal social interaction in main lobby spaces, is perceived to impact Student Social Development.

- The playground and the cafeteria are the two locations that students are free to express themselves and let off some energy. Even with teacher concerns over the lack of opportunities for constructive play, students find imaginative ways to make the playground their own. (25, 31, 32, 138, 142)
- The most openly social place in all of the schools in the study is the main lobby and main office waiting area. It is this area that provides the liveliness, and rich informal social interaction throughout the day. This combination of areas serves to support social development of students. (25, 31, 32, 138, 142)
- The centralized location of the Commons serves as a true community forum. The Commons was observed as serving as a cafeteria, student meeting area, staff meeting space, community commons and informal social encounter space that clearly supports social development. (25)
- Even though the underutilized library/media center is not programmed for any particular purpose, it has become an informal place for students from various classes to informally gather and socialize, and serves as a small group instructional area as well. One teacher has allowed her students to spill over into the unused space if they need more privacy for doing their work. (142)
- Shared lockers are seen as a place encouraging social development even though sharing may produce feelings of lack of privacy, and lack of personalization and ownership on the part of students. (142)

Teacher Instructional Performance

Places for Social Interaction, in particular, the opportunity for a variety of informal social places other than the teachers' lounge, is perceived to impact Teacher Instructional Performance.

- The non-use of the teacher lounge as a social place was not seen as a problem for teachers given that they informally interact with each other in other places in the school such as their own classrooms, corridors, administrative offices and in numerous staff meetings. (32, 142)

8. Privacy

Privacy refers to the degree to which occupants feel that there are places within the school building which provide opportunities for an individual or a small group to be free from the intrusion of others.

Issues and Concerns Raised

Sixty-five percent of teachers indicate they experience concerns over their own privacy, or the privacy needs of their students, on either a daily (19%), weekly (15%), or monthly (19%) basis.
The following is a list of privacy issues identified.

- the issue of open plan versus self-contained classrooms is seen as having an affect on privacy for students (i.e., having room for activity areas or learning stations). (25, 32, 138, 142)
- teachers have opportunities for privacy, such as the teachers' lounge, but they are not always used due to the shortage of time. (31, 32, 142)
- sharing lockers with other students limits opportunities for privacy. (138, 142)
- self-contained classrooms limit the ability of teachers to provide semi-private work areas for students in need of such space. (32)

Survey Findings

Even with half of teachers experiencing little or no control (51%) over privacy needs, only 26% feel that the manner in which privacy concerns have been dealt with at their school has been somewhat unfair or unfair to students and teachers, as well as only 17% feeling privacy is somewhat hindering the efforts of the school to provide an effective environment for teaching and learning. Overall, teachers are very to somewhat pleased (38%) with how privacy concerns have been addressed. Many teachers feel that privacy is either very important (38%), or somewhat important (34%) in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and either very important (38%), or somewhat important (28%) in supporting the goal of increasing Student Academic Performance.

Links to Educational Outcomes and Goals

Student Academic Performance

Privacy concerns, in particular, concerns over acoustic and visual privacy in open space instructional areas and personal space at table groupings, is perceived to impact Student Academic Performance.

- Open space instructional areas are seen by the working group as providing little privacy for students which has the potential to affect Student Academic Performance. The performance of some students who work well in small groups or in privacy that are unable to do so because of the physical layout of the school, may suffer. Some classroom areas within the school provide places such as corners or activity areas, others do not. Several teachers indicated that students are allowed to go to any place within the classroom, but often only a few choose this option. (25, 138, 142)
- When students don't always get the personal space they need, the situation often results in fights. One teacher stated: "We average several fights a week." In a situation such as this, students can become territorial about their workspace and this can become another major obstacle to securing their sense of privacy and personal space. Self-contained classrooms

Table: Survey Findings for Privacy

[1] **How frequently** are concerns for PRIVACY at issue in your school?	Daily	Weekly	Monthly	Yearly	Never
	19%	15%	19%	12%	35%
[2] Do you feel that the opportunities for PRIVACY within your school are					
(a) **fair or unfair to teachers?**	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
	29%	25%	18%	14%	14%
(b) **fair or unfair to students?**	Fair	Somewhat Fair	Neutral	Somewhat Unfair	Unfair
	28%	24%	24%	14%	10%
[3] To what degree do you feel you have **control** over your PRIVACY?	Complete Control	Significant Control	Some Control	Little Control	No Control
	7%	21%	21%	41%	10%
[4] Have PRIVACY concerns **helped or hindered** the efforts of your school to provide a effective environment for teaching and learning?	Very Helpful	Somewhat Helpful	Neutral	Somewhat Hindering	Very Hindering
	7%	21%	52%	17%	3%
[5] Overall, how **pleased or disappointed** are you in the extent to which PRIVACY concerns have been addressed?	Very Pleased	Somewhat Pleased	Neutral	Somewhat Disappoint.	Very Disappoint.
	14%	24%	38%	21%	3%
[6] **How important** do you think PRIVACY is in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate?**	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
	38%	34%	24%	3%	0%
(b) **increasing student achievement?**	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
	38%	28%	24%	10%	0%

limit the ability of teachers to provide semi-private work areas for students in need of a such as place. Crowded classroom tables in these classrooms add to this perception. (32)Student Social Development

Privacy concerns, in particular, concerns over acoustic and visual privacy in open space instructional areas, is perceived to impact Student Social Development.

- Open space instructional areas are seen by the working group as providing little privacy for students and that has the potential to affect Student Social Development. Some students do not work well in large instructional groups, needing at times some privacy to conduct their work. When not afforded these opportunities, students may become disruptive in class, causing fights. Some classroom areas within the school provide places such as corners or activity areas, others do not. Several teachers indicated that students are allowed to go to any place within the classroom, but often only a few choose this option. (25, 138, 142)

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- Added to the lack of privacy during instruction, students must continue to experience the lack of privacy while securing items from their lockers, often shared with one or two additional students. (142)

- Due to the school not providing for students' privacy needs, social development may suffer. Many students when at home are unable to find the privacy that they need. When they arrive at school, they may find it difficult at times to continually adjust to others, causing fights. Often, disruptive students are taken out of the class and in to a classroom where similar students with similar behavior are placed until they can settle down and be returned to their class.(32)

Teacher Instructional Performance

Privacy concerns, in particular, concerns over acoustic and visual privacy in open space instructional areas, is perceived to impact Teacher Instructional Performance.

- Teachers feel that they do not always get privacy in the open plan space, especially from other teachers and classes. For teachers, unlike students, opportunities for gaining some sense of privacy during the school day does exist. Some teachers mention the teachers lounge, others mention their own classrooms during lunch period, and one teacher identified the corridor outside her classroom has at times provided her with the momentary privacy she needed. (25, 142)

- Teachers have opportunities for privacy, such as the teachers' lounge, but they are not always used due to the lack of time allowed to get away from continuous daily activities. (142)

9. Sensory Stimulation

Sensory Stimulation refers to the degree to which occupants feel the school building provides a stimulating environment for learning that is safe yet challenging.

Issues and Concerns Raised

Sixty-seven percent of teachers responding to the survey indicated they experience some concerns over sensory stimulation either on a daily (11%), weekly (30%), or monthly (19%) basis.
The following is a list of sensory stimulation issues identified.

- the condition of the existing playground is not seen as providing the appropriate level of sensory stimulation for students. (25, 31, 32, 138, 142)
- student work displays are believed to provide a positively stimulating environment for students. (25, 31, 32, 138, 142)
- the lack of views out windows limits opportunities for sensory stimulation of natural daylight and knowledge of outdoor conditions. (25, 31, 32, 138, 142)
- the sterileness of double loaded corridors (i.e., high walls and ceilings, smooth surfaces, and wide corridors), despite colorful and exciting student work displays, contributes to a sense of low sensory stimulation. (31, 32)

Survey Findings

Despite 67% of teachers expressing concerns over sensory stimulation, the working groups of four of five schools feel they have a good handle on providing the appropriate level of sensory stimulation for their students, and rate themselves high with regard to this quality. Sixty-three percent of teachers feel they have complete to significant control over the sensory stimulation concerns at their school. The overwhelming majority of teachers (85%) feel that the manner in which sensory stimulation concerns have been dealt with have been fair to somewhat fair, as well as very to somewhat helpful (77%) in providing an effective environment for teaching and learning. Overall, teachers are very to somewhat pleased (81%) with respect to how sensory stimulation concerns have been addressed. A majority of teachers feel that sensory stimulation is very important (59%) in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and very important (61%) in supporting the goal of increasing Student Academic Performance.

Links to Educational Outcomes and Goals

Student Academic Performance

Sensory Stimulation concerns, in particular, concerns over the quantity and quality of educational displays, can have an affect on Student Academic Performance.

- The quality of sensory stimulation through the use of educational displays on classroom and corridor walls is seen by teachers to support Student Academic Performance. (25, 31, 142)

Table: Survey Findings for Sensory Stimulation

[1] **How frequently** are issues of SENSORY STIMULATION a concern at your school?	Daily 11%	Weekly 30%	Monthly 19%	Yearly 7%	Never 33%
[2] Do you feel that the concerns for SENSORY STIMULATION have been **fair or unfair to teachers and students**?	Fair 58%	Somewhat Fair 27%	Neutral 15%	Somewhat Unfair 0%	Unfair 0%
[3] To what degree do you feel you have **control** over SENSORY STIMULATION in your classroom and school overall?	Complete Control 30%	Significant Control 33%	Some Control 33%	Little Control 4%	No Control 0%
[4] Have SENSORY STIMULATION concerns **helped or hindered** the efforts of your school in providing a safe environment for learning?	Very Helpful 44%	Somewhat Helpful 33%	Neutral 22%	Somewhat Hindering 0%	Very Hindering 0%
[5] Overall, how **pleased or disappointed** are you in the extent to which SENSORY STIMULATION concerns have been addressed at your school?	Very Pleased 44%	Somewhat Pleased 37%	Neutral 15%	Somewhat Disappoint. 4%	Very Disappoint. 0%
[6] **How important** is SENSORY STIMULATION in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate**?	Very Important 59%	Somewhat Important 37%	Neutral 4%	Somewhat Unimportant 0%	Very Unimportant 0%
(b) **increasing student achievement**?	Very Important 61%	Somewhat Important 32%	Neutral 7%	Somewhat Unimportant 0%	Very Unimportant 0%

Student Social Development

Sensory Stimulation concerns, in particular, concerns over displaying individual student work, is perceived to impact Student Social Development.

- The quality of sensory stimulation within the walls of the school was understood by teachers to potentially influence social development through the display of individual student work. Often students will proudly show their work to others. (25, 31, 32, 138, 142)
- Playgrounds are not seen as providing the necessary sensory stimulation for students and may potentially influence social development. (31, 32, 138, 142)

Teacher Instructional Performance

Sensory Stimulation concerns, in particular, concerns for views out windows,is perceived to impact Teacher Instructional Performance.

- Teachers mentioned the lack of views out windows as evidence of poor sensory stimulation that often affects their attitude and mood and potentially hinders their instructional performance. (31, 142)

- The quality of sensory stimulation as illustrated through well-planned educational wall displays could be seen as reinforcing a teacher's instruction. There are instances however, where some student work displays are perceived by a few teachers to be less effective in carrying an instructional message due to their chaotic organization and lack of theme. (142)

10. Crowding/spaciousness

Crowding/Spaciousness refers to the degree to which occupants feel the school building cannot adequately accommodate the number of students and teaching staff occupying it.

Issues and Concerns Raised

Sixty-nine percent of teachers responding to the survey indicated that they experience some concerns over crowding/spaciousness in their school. Teachers experience crowding/ spaciousness concerns daily to weekly (34%), monthly (19%), and yearly (15%).
The following is a list of classroom adaptability issues identified.

- open instructional areas provide opportunities for learning centers and small group instruction. (25, 31, 138)
- the crowding of self-contained classrooms with tables is seen as a concern. (32)
- classes at all grade levels in open instructional areas are perceived as crowded.(142)
- crowded administrative area (142)

Survey Findings

Although 74% teachers feel they have little or no control over the crowding concerns at their school, and 44% of teachers feel that the manner in which crowding concerns have been dealt with have been somewhat hindering in providing an effective environment for teaching and learning, 59% feel the school administration has been fair to somewhat fair in addressing crowding concerns within their schools. Yet, overall, 44% of teachers indicated that they were somewhat to very pleased (44%) with how crowding/spaciousness concerns have been addressed. A majority of teachers feel that crowding/spaciousness is very important (78%) in supporting the goal of maintaining a safe, healthy and nurturing learning climate, and very important (67%) in supporting the goal of increasing Student Academic Performance.

Links to Educational Outcomes and Goals

Student Academic Performance

Crowding/Spaciousness concerns, in particular, concerns over overcrowded classrooms, is perceived to impact Student Academic Performance.

- In classrooms perceived to be overcrowded, teachers feel Student Academic Performance suffers. Being in close quarters, students often feel their personal space is violated by other students resulting in fights and disruptions that interfere with their instructional learning. (32, 142)

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[1] **How frequently** is CROWDING/ SPACIOUSNESS an issue at your school?	Daily 19%	Weekly 15%	Monthly 19%	Yearly 15%	Never 31%
[2] Do you feel that the manner in which CROWDING/SPACIOUSNESS concerns have been dealt with at your school have been **fair or unfair to teachers and students**?	Fair 26%	Somewhat Fair 33%	Neutral 22%	Somewhat Unfair 19%	Unfair 0%
[3] To what degree do you feel you have **control** over the CROWDING/ SPACIOUSNESS at the school?	Complete Control 0%	Significant Control 11%	Some Control 15%	Little Control 52%	No Control 22%
[4] Have CROWDING/ SPACIOUSNESS concerns you have identified above **helped or hindered** the efforts of your school to provide a safe environment for learning?	Very Helpful 7%	Somewhat Helpful 15%	Neutral 33%	Somewhat Hindering 44%	Very Hindering 0%
[5] Overall, how **pleased or disappointed** are you in the extent to which CROWDING/ SPACIOUSNESS concerns have been addressed at your school?	Very Pleased 11%	Somewhat Pleased 33%	Neutral 26%	Somewhat Disappoint. 30%	Very Disappoint. 0%
[6] **How important** is CROWDING/ SPACIOUSNESS in supporting the goal of...					
(a) **maintaining a safe, healthy and nurturing learning climate**?	Very Important 78%	Somewhat Important 15%	Neutral 7%	Somewhat Unimportant 0%	Very Unimportant 0%
(b) **increasing student achievement**?	Very Important 67%	Somewhat Important 26%	Neutral 4%	Somewhat Unimportant 4%	Very Unimportant 0%

Student Social Development

Crowding/Spaciousness concerns, in particular, concerns over overcrowded classrooms, is perceived to impact Student Social Development.

- In classrooms perceived to be overcrowded, teachers feel Student Social Development suffers. Table-crowded self-contained classrooms add to the perception of crowding. Some students spend the majority of their day in their self-contained classrooms at tables that do not provide enough room for them to work. Being in close quarters, students often feel their personal space is violated by other students, resulting in fights and arguments. (32, 142)Teacher Instructional Performance

Several working groups are in agreement that Crowding/Spaciousness concerns, in particular, concerns over overcrowded classrooms, is perceived to impact Teacher Instructional Performance.

- In classrooms perceived to be overcrowded, teachers feel their own instructional performance suffers. Being in close quarters, students often feel their personal space is violated by other students resulting in fights and disruptions that interfere with instructional time. One teacher remarked that her role was that of crowd controller, not teacher. (142)

APPENDIX B
Environmental Concerns

APPENDIX B1
Dr. Rayner Browne Elementary School #25
Environmental Concerns Ranked by Priority

High Priority Concerns

1. Poor Outdoor Lighting
Outdoor lighting is poor, especially during evening events such as PTO meetings in the winter months. Lighting is poorest along the north side of the building where teachers walk to the parking lot. In addition, there is no lighting on the east side or south side at all.

2. Poor Air Quality
There are problems with dry air, poor air flow and ventilation experienced by many teachers in the school. Some teachers are aware that air borne bacteria could infect students and teachers. Some teachers have complained of irritated red and itchy eyes and aggravated allergies.

3. Playground Safety
Although custodians do an excellent job of cleaning up the grounds, glass and needles are still found in the grass and on the playground by students. The problem is ever present. The basketball hoop and the remains of the monkey bars were recently removed to discourage use of the grounds.

4. Concern over Neighborhood Quality
The overall neighborhood quality exerts an overall negative affect on all activities within and around the school. Teachers fear for student safety, and several drug related incidents in the surrounding neighborhood during school hours have reminded them of the need to be vigilant. Crime has seemingly gotten worse around the school — there are more shootings and strangers are found walking through the parking lot and around the school entrance during the day. Teacher concerns over neighborhood quality are associated with the problems and frustrations they see children bringing into the school.

5. Lack of Adequate Cafeteria Storage
There is a lack of space for storing cafeteria supplies and food. Recently, some storage has been shared with the custodial staff.

Moderate Priority Concerns

6. Noise in Pods
Pod (open plan) teachers regularly complain of noise from other classes. Some classes are required to move past those classes nearest the corridor to get to their instructional areas, thereby disturbing activities. Talking over other pods escalates the noise problem. It was recognized that this is as much a classroom management concern as it is an environmental

quality concern.

7.Lighting in Pods

Lighting in the pods is satisfactory, but could be better. The pods are not always as bright as other areas in the building such as self-contained workrooms and the main office. Lighting on the second floor seems to be too high and diffuse. The opportunities for supplementing artificial lighting with natural daylighting is limited due to the frosted Plexiglas windows and further reduced by the need for curtains on the first floor windows to discourage potential intruders from looking in and inventorying equipment in instructional areas.

8. Open Plan versus Self-Contained

Teachers feel that in open plan instructional areas it is hard to manage student behavior due to noise and distractions from other classes. Sometimes more time is devoted to discipline and classroom management than teaching and learning. This is a source of frustration for many teachers. Special education students seem to be most affected by these distractions.

Low Priority Concerns

9. Additional Storage Space Options

Some teachers felt that cabinets under sinks and against walls are not enough for the entire pod. Shared storage space is unorganized and over-packed with various materials and books that have not been used in years. Most teachers felt that the problem could be resolved by carefully organizing shared storage rooms.

10.ADA Accessibility

There are currently no building codes or ADA regulations that would require the school to provide disabled accessibility unless a building experiences major renovation, addition or alteration. However, the concern of providing access is of concern to the school. The school has no means of vertical transportation for the disabled, nor does it provide any appropriate bathroom stalls.

APPENDIX B2
Coldstream Park Elementary School #31
Environmental Concerns Ranked by Priority

High Priority Concerns

1.Multiple Points of Entry
Although multiple points of entry have a positive impact on reducing bottlenecks at the main entry and lobby, it also poses a security problem in that more entrances must be monitored for intruders. Most of the concern over intruders comes from teachers in the Kindercourt Wing where the entrance is often propped open due in part to people not completely closing the doors and also to improperly functioning door closers.

In addition, although the main entry has been unlocked and welcoming for visitors, recently a buzzer system had to be installed like many other schools in BCPS due to a series of recent daytime intruder incidents including one incident in which A/V equipment had been taken from a classroom.

2. Unsafe Kindercourt Playground

The Kindercourt playground has not been used other than for semi-annual cook-outs due to its perception by teachers as being an unsafe outdoor area. Playground equipment is broken, fencing has been damaged or stolen, there is a lack of direct visibility of the playground from within the school. and drug paraphernalia and broken glass is found routinely by custodians in both the playground area and the surrounding grass play areas.

3.Parking Lot Safety
Parking lot safety is a continuing concern for teachers. Staff cars are regularly broken into. The existing camera is not functioning and a lack of adequate lighting exists on both sides of the building.

4. Cross Traffic Safety Concern

Parents and visitors attempt to park along and drive fast through the drive access in front of the building entrances, causing potential cross traffic safety problems with exiting students. The problem has been resolved temporarily during final dismissal through the use of student crossing guards and orange cone markers, but parents still routinely disregard these signs, increasing the potential for accidents.

5. Old Carpeting
The carpeting in most classrooms is over a decade or more old, is lifting up in spots, shows a multitude of stains, and even after cleaning often emits odors. Carpeting is most critically a problem in the pre-kindergarten and kindergarten classrooms since most of the time is

spent on the floor. Children often get sick on the floor and the carpeting needs to be cleaned much more often than in upper grade levels.

6. Thermal Control
There are different degrees of control teachers experience with respect to thermal conditions in their classrooms. Some teachers have the ability to control their univents, while a number of teachers do not. Operable window provide some local control of thermal conditions, albeit inefficient.

7.Emergency Lighting
There is a lack of emergency lights in stairwells.

Moderate Priority Concerns

8. Upkeep of Grounds
The upkeep of grounds has been a reoccurring concern for the school: the grass is not regularly mowed, and garbage collects along the fence lines of the school property. The responsibility for the grounds upkeep belongs to Baltimore City, and is not contractually a school task. In the desire to maintain the grounds at a minimum level of quality, the school custodian has unofficially assumed this task.

9. Teachers' Lounge
The teachers' lounge could be more inviting and currently is not the kind of place teachers can go to relax or unwind. The couch wood frame is damaged and in need of repair, they need additional seating and table furniture, and the room needs to be better cleaned, organized and managed.

10. ADA Accessibility
There are currently no building codes or ADA regulations that would require the school to provide ADA accessibility unless a building experiences major renovation, addition or alteration. However, the concern of providing access is of concern to the school. The school has no means of vertical transportation for the disabled, nor does it provide any ADA bathroom stalls.

Low Priority Concerns

11. Cafeteria/Auditorium Divider Partition
The divider partition between the cafeteria and the auditorium is in functional disrepair and is in need of replacement.

12.Need for Additional Electrical Outlets
Some teachers felt that there were not enough electrical outlets (currently three to a room) and special outlets in anticipation of special equipment and computers to make the classroom adaptable (recently twelve computers were donated for classroom use). A cable wiring project started and stopped without being completed.

APPENDIX B3
Mildred Monroe Elementary School #32
Environmental Concerns Ranked by Priority

High Priority Concerns

1."It's Too Hot!"
Within the school building it can be very hot and humid from late April to early May continuing until school ends in June. Often it can also be hot into the month of September. Students do not seem as affected as adults; they adapt, but at what cost? During test taking periods at the end of the year some classes are moved to more comfortable rooms.

2.Urban Services Dumpster
The Urban Services dumpster and the landscaping adjacent to the school parking lot presents both an appearance and a health and safety concern. Children regularly play on old bed mattresses, chairs, and other large items left there by neighborhood residents. The school has had only minimal success dealing with several city agencies to get the trash removed. School custodians have responded by voluntarily removing larger items from around the Urban Services Dumpster, but this is only a short-term solution to a long-term problem.

3. City Alley
For several years, a large mound of heaved pavement at the north end of the city alley has made it difficult and unsafe to access the school parking lot. The alley is in desperate need of repaving. In the meantime, teachers have adapted by entering the site from the south which is intended as a exit not an entrance to the parking lot.

4 Playground Safety
The existing playground is a liability concern for the school. Glass, condoms and other items are regularly found on the playground. Play equipment is old and damaged, while some of the equipment has been vandalized or stolen. As a result of the lack of playground equipment and space, for example, children often use the paved hillside on Urban Services property to slide down trays in the winter. Minor accidents have occurred in the past, but the school is concern that something more serious could happen. Replacement of damaged or missing equipment has not been possible.

5 Child Safety & Vehicular Traffic

There is an overlapping of functions on the site between the parking lot and playground area. Service vehicles and other visitors routinely cross traffic in the playground with children playing. Although there has never been an incident, there is a concern that there is the potential for accidents.

6. Classroom Tables

Tables, provided as a component of the previous educational program, are felt to take up valuable space in the self-contained classrooms. It was felt that six tables do not give teachers as many configuration options as the 28 desks. With the tables there are no places for students to put books and therefore they are stacked on tables, limiting the effective use of the working surfaces. In addition, there is very little elbow room when eight students are sharing a table designed for six, especially with older students.

7. Lack of Personal Space for Students

Students do not always get the personal space they need, and as a result, several fights occur each week. Students have few options for personalizing their space. They have no desk to call their own, in many cases they share lockers with other students, and materials and supplies are stored in shoe boxes and placed in the corner of the room.

8. A "Quality Zero" Carpet

Rugs were given to all classroom teachers as part of the Tesseract program. One teacher, however, did not receive a rug, and was left with an old one that is difficult to clean. Students of this teacher spend many hours of their day on this carpet and therefore the need to replace it was seen as a high priority.

Moderate Priority Concerns

9. Reoccurring Insect Problem

Although the insect problem has been addressed by the school it is still a reoccurring problem. Steps have been taken to resolve it.

10. Locked Storage for Teachers' Personal Belongings

Not all teachers have keys to lock personal belongings in closets, nor do all teachers have keys to their classrooms. As a result, they have a sense of a lack of control in securing their belongings.

11. Wall Hanging Problems

Due to the often high humidity in the building it can be difficult to secure wall hangings to painted concrete block walls. The desire for a tackable linear cork strip surface was discussed to resolve this problem.

12. Developing Relationship with Custodian

Although several custodians respond quickly to requests, a few in the recent past have not. Counters are not washed. The work is not always seen as consistent. Teachers felt that there was too much turnover of employees at the school in the past few years. One teacher acknowledges that perhaps in the past, the teachers have not been specific in stating their needs.

Low Priority Concerns

13. Acoustic and Noise Problems in Bathrooms and Corridors

The noise in the bathrooms on both the first and second floors was seen as being louder that normal. Teachers have acknowledged that the noise is not all the students' fault. It is suspected that the noise problem is partly a result of the reverberations of students' voices against the hard surfaces in the building in general. Acoustical treatment in the bathrooms and hallways poor (tile, concrete and metal lockers).

14. Acoustic and Noise Problems in Classrooms

Classrooms can be loud at times. Acoustical treatment in classrooms, similar to hallways and bathrooms, is poor: walls as well as ceilings are constructed of painted concrete block, while floors are tile with a small amount of carpeting. This concern was seen to be more easily addressed as a classroom management concern.

15. Street Noise

The city sidewalk and street are close to all east classrooms. People can be heard outside causing some distractions for teachers and students. Playground noise can also be a problem for some, but not all classes. It was agreed that street noise is not something the teachers have much control over, and many schools have problems with street noise.

16. Unsightly Windows

The existing shatter proof frosted Plexiglas windows are very unsightly. Occupants cannot see through them and get only minimal diffuse natural daylighting. Due to the metal bar cages on the first floor, the opportunity to open windows for ventilation in the hot and humid months is eliminated, causing much discomfort for both teachers and students.

17. Unused Teachers' Lounge

The teachers' lounge is not used due primarily to its remoteness to classrooms, unappealing appearance as well as simply having a lack of adequate time for lunch. Currently, teachers eat their lunches in the air conditioned computer room or in their own rooms. It has been acknowledged by the administration that the teachers' lounge is in need of some renovation and possibly relocation, and steps are underway to improve these conditions for teachers.

18. Stair Safety

The north stairwell is open to below and is seen as a bad design with respect to safety. There have been no major accidents, but the north stairwell has an open drop which could be unsafe for children. The staff has to watch that children do not fall.

19.Threat of Intruders

A door buzzer and mirror help with security and incidents have dropped off in the past year, but often intruders still get by. Parents do not always stop in the office to receive passes since they feel they have special rights. Sometimes students may open doors for people. As a result, the school often experiences unknown people wandering the building. In many cases, intruders are known by individuals in the school.

20. Problems with Computer Installation

In a few classrooms, computers were installed in such a way as to block valuable bulletin board space. Computers could be placed back to back instead of along the wall.

21. Difficulty in Conducting Interclass Projects

The building design does not allow for as much team teaching as the principal would like. However, the structure of building that would allow for team teaching might not be the structure that most teachers would be comfortable teaching [open plan]. Team teaching is not a high educational priority of this school.

22. Cooperative Learning in Self-Contained Classrooms

In self-contained classrooms, there is often no room for "activity centers" and true cooperative learning. One teacher remarked that the school was built for row and column classrooms, not cooperative learning.

23. Handicapped Accessibility

There are currently no building codes or ADA regulations that would require the school to provide handicapped accessibility unless a building experiences major renovation, addition or alteration. However, the concern of providing access is of concern to the school. The school has no means of vertical transportation for the disabled, nor does it provide any ADA bathroom stalls.

APPENDIX B4
Harriet Tubman Elementary School #138
Environmental Concerns Ranked by Priority

High Priority Concerns

1. Dissatisfaction with Open Space
Open space promotes collegiality among teachers, but noise and distraction continue even with some new portable bulletin boards. There is no wall space so teachers must hang posters from the ceiling, there is also inadequate chalkboard space, and no locked cabinet storage in the classroom for instructional materials or personal belongings.

2.Inefficient Self-contained Classroom
One self-contained kindergarten classroom on the first floor has a platform in the room that makes layouts awkward: the sink is too high for children to use, there is no room for a dedicated gathering space, and the space on the steps is wasted space and used for storage.

3. Congested Stair/Main Lobby

There is often congestion as students enter the main lobby stair during the morning and at dismissal. A single-leafed door that leads out from the stair contributes to this problem at dismissal. This congestion could be a problem if a fire occurred. Lighting may be insufficient in the stair tower.

4. Lack of Adequate Playground Equipment
The school does not have adequate playground equipment. Teachers feel that aging monkey bars and one basketball court do not constitute a true playground.

5. Lack of Adequate Tot Lot Area
One teacher explains that she has no tot lot to take her students out to, so she uses the sidewalk on the south side of the building and moves a sandbox outside in warmer weather.

6. Upkeep of Grounds
All occupants in the school are aware of the state of the exterior ground of the school: glass, uncut grass, damaged fencing, peeling paint on of stair towers, graffiti, slow trash pick-up, lack of neighborhood ownership and playground equipment were the main concerns mentioned.

7. Psychological Safety While on Building Grounds
Everyone feels safe in the school, but some do not feel safe outside due to open-air drug dealing, misuse of school grounds by adults in the evening, and car thefts.

8. Too Hot, Too Cold
Parts of the building have continual problems with heating in the winter, while other parts

of the building suffer from being too cold in the spring and fall months. Teachers have limited perceived control over temperature fluctuations.

Moderate Priority Concerns

9.Non-use of Computer Nooks
No use of computers on the second floor computer areas were observed on either side of the building.

10. Bathroom Ventilation
Ventilation in the bathroom not operating/ working as they should; fan motors were not operating, although a work order had been placed.

Low Priority Concerns

11.Inefficient Use of Open Space
Space utilization is poor on the second floor in one open space instructional area, caused by the loss of a teacher position due to a change in enrollment. The concern was raised to how might left over space be shared among other teachers in the Pod.

12.ADA Accessibility
Existing bathrooms do not meet ADA handicapped accessibility code (Note: There are no state of federal regulations requiring ADA compliance in older existing buildings unless there is major structural change)

APPENDIX B5
Robert Coleman Elementary School #142
Environmental Concerns Ranked by Priority

High Priority Concerns

1. Playground Unsafe
The play equipment is very unsafe although there has never been any major accident. There is no facility for younger children to do gross motor activity. The school is writing a federal grant to raise funds to construct a more appropriate playground.

2. Overcrowded classrooms
Classrooms are overcrowded from 32 to as many as 47 students in a single class. As a result, there is no room to set up learning centers. More class time is devoted to behavior modification than learning.

3. Too Cold!
Currently, the air conditioning system is much better regulated than in the past, however, some rooms are still much colder than others. Cutting down air in one pod area has the unintended effect of shutting air down in other parts of the building.

4. Air Quality
Windows do not open by design and therefore teachers and students cannot get fresh air they want. The existing air quality in the enclosed space is not satisfactory to most teachers. The school administration is not sure about the quality of the air, it has never been tested.

5. Inadequate Lobby Design
The lobby area, not being large enough to accommodate the traffic, becomes a bottleneck at several periods during the day. In addition, there is not enough lighting in the lobby due to incandescent light fixtures and dark unreflective surfaces.

6. Underutilized Library/Media Center
The library/media center has come under disuse due to the lack of funding for a librarian position and books. The space on the second floor has become an informal instructional space, and is vacant most of the time. Computers are inoperative, books are outdated and in disarray. The school has considered plans to rearrange the instructional space on the second floor to take advantage of this space.

7. Lack of Adequate Bathroom Ventilation
The custodians are very responsible in keeping the bathrooms satisfactorily clean, however odors in the bathroom are a constant problem due primarily to a lack of ventilation. This problem exists for all bathrooms in the building.

8. Computer Problems

A third of the computers in the building do not function properly. No one staff member has been assigned the responsibility of maintaining them, nor does anyone have the knowledge to address computer related problems.

9. Problems with Parents Finding Way

Parents tend to get confused when they come up the stairs to the second floor when looking for their child's classroom. Much of this problem stems from the way in which they are directed by staff, however, the confusing layout only adds to the problem.

10. Storage Unorganized

Teachers feel that they have adequate storage, it is just not properly organized or managed as it could be. As a result, it is hard to do an inventory of books and supplies, and there is no room for additional storage needs. Books and supplies stored in open instructional areas are routinely stolen or misplaced.

11. Safety in the Parking Lot

Many teachers do not feel safe in the parking lot after school hours. Cameras were installed as part of an effort to make the parking more secure, but the cameras are not often monitored as expected. As a result, staff cars are still being broken into on a regular basis.

12. Ventilation for Science Projects

Some teachers are precluded from conducting science projects due to a lack of ventilation to the outside.

13. Open Space versus Self-Contained

Most teachers are using traditional educational styles of teaching appropriate in self-contained classrooms, not the styles appropriate for open space school such as team teaching, group work, and planning together The disordered open plan configuration of the school has contributed to endless distractions from other classes and from constant traffic flow, as well as problems of privacy. The arrangement of instructional areas has been compromised further by a number of column obstructions that severely limit classroom adaptability.

14. Safety from Intruders

Custodians monitor doors periodically, but still there are problems. Teachers do not bring personal items to school for fear of theft, and visitors do not always get a pass from the office or sign the log book: Some intruders still get through the cracks.

15. Visibility & Surveillance

Teachers cannot always see children in stairwells near exists.

16.Vision of One Stop Shop Interagency Approach

The desire for further structural changes follows closely with the vision of a one-stop shop interagency facility that provides a variety of community services.

17. First Floor Instructional Area Layout
There is a desire on the part of teachers to capture existing space between the pods in order to increase the workable open instructional space.

18. Crowded Administrative Area
Due to the influx of new functions, the administrative area has become overcrowded, the waiting room is inadequate for the amount of traffic, the principal has moved into the conference room, and other rooms have been taken over by administrative computer systems.

Moderate Priority Concerns

19. Landscaping Projects
Landscaping is minimal on the school site. Teachers suggested that students could get involved in planting trees as a science project to provide a sense of ownership in the school. A similar project, a garden, was attempted before with some positive results.

20. Sharing Lockers
Students are forced to share lockers which reduces their sense of privacy over personal belongings, although it encourages then to learn to share. As a result, many things are stolen or lost such as coats, bags, books, and tennis shoes among other items.

21. No Views out Windows
Windows were designed to be shatter proof, but, due to the frosted quality of thePlexiglas material, provide no views to the outdoors. Most windows cannot be opened for reasons of security, thus limiting the use of windows for fresh air. Windows deliver very little natural daylighting to the classroom spaces.

22. Signs of Academic Unity
Although some signage is present, the demarcation between academies is not entirely clear. Suggestions included different color schemes, and more elaborate signs of entry into an academy.

23. Student Work Displays
Improvements could be made in the student work displays. Some rooms are more chaotic and disorganized than others. More coordination is needed between decor and themes within and between academies.

24. ADA Accessibility
There are currently no building codes or ADA regulations that would require the school to provide ADA accessibility unless a building experiences major renovation, addition or alteration.

25. Plumbing & Flooding

Plumbing has on several occasions backed-up and flooded the hallways during severe storms. The question of responsibility was raised as to whether it is the city's backed-up drains or the school's older supply lines?

Low Priority Concerns

26.Non-use of Teachers' Lounge

The teachers' lounge is not used by teachers. The lounge is used for periodically working with disabled children and functions as an informal day-care center in the afternoon.

27.School-wide Assemblies

There is a low priority need for a larger auditorium space for school-wide assemblies.

APPENDIX C
Environmental Quality Attribute Data Sets

Summary Table of Environmental Quality concerns organized by Potential Impact on the Educational Process

ENVIRONMENTAL QUALITY TABULATIONS												
		PCH	CA	S&S	BF	A&A	P&O	SP	Pr	SS	C/S	Totals
Browne#25												
	Stud Perf	2	1	1	2	0	2	0	1	0	0	9
	Soc Dev	2	0	1	1	0	1	0	0	0	0	5
	Teach Perf	2	1	1	2	0	2	0	1	0	0	9
	Subtotal EO	*6*	*2*	*3*	*5*	*0*	*5*	*0*	*2*	*0*	*0*	*23*
	None	0	1	2	1	1	1	1	0	1	0	8
	Total	6	3	5	6	1	6	1	2	1	0	**31**
Monroe#32												
	Stud Perf	5	2	0	0	2	1	1	1	0	1	13
	Soc Dev	2	2	1	0	1	2	2	2	0	2	14
	Teach Perf	5	3	1	0	2	1	0	0	0	0	12
	Subtotal EO	*12*	*7*	*2*	*0*	*5*	*4*	*3*	*3*	*0*	*3*	*39*
	None	1	1	5	2	4	0	2	1	1	0	17
	Total	13	8	7	2	9	4	5	4	1	3	**56**
Coleman #142												
	Stud Perf	3	5	1	2	0	1	1	2	0	1	16
	Soc Dev	2	5	1	4	4	4	4	3	4	2	33
	Teach Perf	4	6	4	5	1	1	1	2	1	2	27
	Subtotal EO	*9*	*16*	*6*	*11*	*5*	*6*	*6*	*7*	*5*	*5*	*76*
	None	2	0	1	2	0	0	1	1	0	0	7
	Total	11	16	7	13	5	6	7	8	5	5	**83**
Tubman #138												
	Stud Perf	3	3	1	0	0	0	0	0	0	0	7
	Soc Dev	1	0	3	2	2	0	0	0	0	0	8
	Teach Perf	2	3	1	0	0	0	1	0	0	0	7
	Subtotal EO	*6*	*6*	*5*	*2*	*2*	*0*	*1*	*0*	*0*	*0*	*22*
	None	1	0	2	2	1	1	1	0	0	0	8
	Total	7	6	7	4	3	1	2	0	0	0	**30**
Coldstream #31												
	Stud Perf	2	2	1	0	1	0	0	0	0	0	6
	Soc Dev	1	0	3	1	2	1	1	0	1	0	10
	Teach Perf	1	1	1	0	0	0	0	0	0	0	3
	Subtotal EO	*4*	*3*	*5*	*1*	*3*	*1*	*1*	*0*	*1*	*0*	*19*
	None	0	0	3	2	1	0	1	1	0	0	8
	Total	4	3	8	3	4	1	2	1	1	0	**27**
	Totals	**41**	**36**	**34**	**28**	**22**	**18**	**17**	**15**	**8**	**8**	**227**

Dr. Rayner Browne Elementary School #25
Environmental Quality Concerns organized by Potential Impact on the Educational Process

Attributes of Environmental Quality	Environmental Quality Issues	S & S	B F	C A	S P	P & O	P	C & H	S S	C/ S	A & A
Student Achievement	2. Poor Air Quality							√			
	4. Neighborhood Quality	√				√					
	6. Noise in Pods							√			
	8. Open Plan vs Self-Contained		√	√		√	√				
	10. ADA Accessibility		√								
	Subtotals	1	2	1	-	2	1	2	-	-	-
Social Development	2. Poor Air Quality							√			
	4. Neighborhood Quality	√				√					
	7. Lighting in Pods							√			
	10. ADA Accessibility		√								
	Subtotals	1	1	-	-	1	-	2	-	-	-
Teacher Performance	2. Poor Air Quality							√			
	4. Neighborhood Quality	√				√					
	6. Noise in Pods							√			
	8. Open Plan vs Self-Contained		√	√		√	√				
	10. ADA Accessibility		√								
	Subtotals	1	2	1	-	2	1	2	-	-	-
None	1. Poor Outdoor Lighting	√									
	3. Playground Safety	√			√	√			√		√
	5. Adequate Cafeteria Storage		√								
	9. Add. Storage Space Options			√							
	Subtotals	2	1	1	1	1	-	-	1	-	1
	Totals	**5**	**6**	**3**	**1**	**6**	**2**	**6**	**1**	**-**	**1**

Coldstream Park Elementary School #31
Environmental Quality Concerns Organized by Potential Impact on the Educational Process

Attributes of Environmental Quality	Environmental Quality Issues	S & S	B F	C A	S P	P & O	P	C & H	S S	C/ S	A & A
Student Achievement	1. Multiple Points of Entry	√									
	5. Old Carpeting			√				√			√
	6. Thermal Control							√			
	12. Additional Electrical Outlets			√							
	Subtotals	1	-	2	-	-	-	2	-	-	1
Social Development	1. Multiple Points of Entry	√									
	2. Unsafe Kinder. Playground	√			√	√			√		√
	6. Thermal Control							√			
	8. Upkeep of Grounds	√									√
	10. ADA Accessibility		√								
	Subtotals	3	1	-	1	1	-	1	1	-	2
Teacher Performance	1. Multiple Points of Entry	√									
	6. Thermal Control							√			
	12. Additional Electrical Outlets			√							
	Subtotals	1	-	1	-	-	-	1	-	-	-
None	3. Parking Lot Safety	√									
	4. Cross Traffic Safety Issue	√									
	7. Emerg. Lighting in Stairwells	√									
	9. Teachers' Lounge		√		√		√				
	11. Cafeteria/Audit. Partition		√								√
	Subtotals	3	2	-	1	-	1	-	-	-	1
	Totals	8	3	3	2	1	1	4	1	0	4

Mildred Monroe Elementary School #32
Environmental Quality Concern Organized by Potential Impact on the Educational Process

Attributes of Environmental Quality	Environmental Quality Issues	S & S	B F	C A	S P	P & O	P	C & H	S S	C/ S	A & A
Student Achievement	1. "It's Too Hot!"							√			
	6. Classroom Tables			√	√	√	√			√	
	12. Custodial Relationship							√			√
	14. Bathroom & Corridor Noise							√			
	15. Street Noise							√			
	16. Unsighly Windows							√			√
	22. Cooperative Learning in...			√							
	Subtotals	-	-	2	1	1	1	5	-	1	2
Social Development	5. Child Safety & Vehicular Traf.	√									
	6. Classroom Tables			√	√	√	√			√	
	7. Personal Space for Students					√	√			√	
	8. A "Quality Zero Carpet"				√			√			√
	15. Street Noise							√			
	21. Interclass Projects			√							
	Subtotals	1	-	2	2	2	2	2	-	2	1
Teacher Performance	1. "It's Too Hot!"							√			
	9. Reoccuring Insect Problem							√			√
	10. Teachers' Locked Storage	√				√					
	12. Custodial Relationship							√			√
	14. Classroom Acoustics & Noise							√			
	15. Street Noise							√			
	20. Computer Installation Prob.			√							
	21. Interclass Projects			√							
	22. Cooperative Learning in...			√							
	Subtotals	1	-	3	-	1	-	5	-	-	2
None	2. Urban Services Dumpster	√									√
	3. City Alley "In Need of Repair"	√									√
	4. Playground Safety	√			√				√		√
	11. Wall Hanging Problems			√							√
	13. Bathroom & Corridor Noise							√			
	17. Underused Teachers' Lounge		√		√		√				
	18. Stair Safety	√									
	19. Threat of Intruders	√									
	23. ADA Accessibility		√								
	Subtotals	5	2	1	2	-	1	1	1	-	4
	Totals	7	2	8	5	4	4	13	1	3	9

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Harriet Tubman Elementary School #138
Environmental Quality Concerns Organized by Potential Impact on the Educational Process

Attributes of Environmental Quality	Environmental Quality Issues	S & S	B F	C A	S P	P & O	P	C & H	S S	C/ S	A & A
Student Achievement	1. Dissatisfaction w/ Open Space			√				√			
	7. Psych. Safety on Bldg Grounds	√									
	8. Too Hot. Too Cold							√			
	9. Non-use of Computer Nooks			√							
	11. Inefficient Use of Open Space			√				√			
	Subtotals	1	-	3	-	-	-	3	-	-	-
Social Development	4. Lack of Playground Equip.	√	√								√
	5. Lack of Adequate Tot Lot Area	√	√								√
	7. Psych. Safety on Bldg Grounds	√									
	8. Too Hot. Too Cold							√			
	Subtotals	3	2	-	-	-	-	1	-	-	2
Teacher Performance	1. Dissatisfaction w/ Open Space			√				√			
	2. Inefficient Self-contained CR.			√	√						
	7. Psych. Safety on Bldg Grounds	√									
	8. Too Hot. Too Cold							√			
	9. Non-use of Computer Nooks			√							
	Subtotals	1	-	3	1	-	-	2	-	-	-
None	3. Congested Stair/Main Lobby	√	√		√						
	6. Upkeep of Grounds	√				√					√
	10. Bathroom Ventilation							√			
	12. ADA Accessibility		√								
	Subtotals	2	2	-	1	1	-	1	-	-	1
	Totals	**7**	**4**	**6**	**2**	**1**	**0**	**7**	**0**	**0**	**3**

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Robert W. Coleman Elementary School #142
Environmental Quality Concerns Organized by Potential Impact on the Educational Process

Attributes of Environmental Quality	Environmental Quality Issues	S& S	B F	C A	SP	P& O	P	C & H	SS	C/ S	A & A
Student Achievement	2. Overcrowded Classrooms			√		√	√			√	
	3. Too Cold!							√			
	4. Air Quality							√			
	6. Underutilized Library/Media		√	√	√						
	8. Computer Problems			√							
	12. Ventilation for Science Proj	√						√			
	13. Open Space vs Self contained			√			√				
	16. Vision: "One Stop-shop"		√								
	17. Middle Space Between Pods			√							
	Subtotals	1	2	5	1	1	2	3	-	1	-
Social Development	1. Playground Unsafe	√			√				√		√
	2. Overcrowded Classrooms			√		√	√			√	
	3. Too Cold!							√			
	4. Air Quality							√			
	5. Inadequate Lobby Design		√		√				√		√
	6. Underutilized Library/Media		√	√	√						
	13. Open Space vs Self-contained			√			√				
	16. Vision: "One Stop-shop"		√								
	17. Middle Space Between Pods			√							
	19. Landscaping Projects			√		√			√		√
	20. Sharing of Lockers				√		√			√	
	22. Signs of Academic Unity					√					
	23. Student Work Displays					√			√		√
	27. School-wide Assemblies		√								
	Subtotals	1	4	5	4	4	3	2	4	2	4
Teacher Performance	2. Overcrowded Classrooms			√		√	√			√	
	3. Too Cold!							√			
	4. Air Quality							√			
	6. Underutilized Library/Media		√	√	√						
	8. Computer Problems			√							
	9. Parents Finding Way		√								
	10. Storage Unorganized		√	√							
	11. Safety in the Parking Lot	√									
	12. Ventilation for Science Proj	√						√			
	13. Open Space vs Self-contained			√			√				
	14. Safety from Intruders	√									
	16. Vision: "One Stop-shop"		√								
	17. Middle Space Between Pods			√							
	18. Crowded Admin. Area		√							√	
	21. No Views out Windows	√						√	√		√
	Subtotals	4	5	6	1	1	2	4	1	2	1
None	7. Lack of Bathroom Ventilation							√			
	15. Visability & Surveillance	√									
	24. ADA Accessability		√								
	25. Plumbing & Flooding							√			
	26. Non-use of Teacher Lounge		√		√		√				
	Subtotals	1	2	-	1	-	1	2	-	-	-
	Totals	7	13	16	7	6	8	11	5	5	5

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APPENDIX D

Student Academic Performance Data Set

Student Academic Performance Data Set

Data Sets	School A (EAI + JCI)			School C (EAI + JCI)			School E (JCI)			School D (none)			School B (none)		
Environmental Perceptions															
# Env Issues	RM	All	%	RM	All	%	RM	All	%	RM	All	%	RM	All	%
High	4	5	80%	6	8	75%	7	18	39%	7	8	88%	7	7	100%
Medium	2	3	67%	4	4	100%	3	7	43%	1	2	50%	1	3	33%
Low	0	2	0%	6	11	55%	0	2	0%	0	2	0%	1	2	50%
Total	6	10	60%	16	23	70%	10	27	37%	8	12	67%	9	12	75%
#Env Issues Perceived as Influencing:	RM	All	%	RM	All	%	RM	All	%	RM	All	%	RM	All	%
Student Perf	3	5	60%	5	7	71%	3	9	33%	3	5	60%	3	4	75%
Social Dev	3	4	75%	3	6	50%	5	14	36%	4	4	100%	4	5	80%
Teacher Perf	3	5	60%	6	9	67%	6	15	40%	3	5	60%	2	3	67%
Total	9	14	64%	14	22	64%	14	38	37%	10	14	71%	9	12	75%
#ECs Influencing	RM	All	%	RM	All	%	RM	All	%	RM	All	%	RM	All	%
Student Perf	4	9	44%	7	13	54%	4	16	25%	3	7	43%	4	6	67%
Social Dev	4	5	80%	4	14	29%	7	33	21%	6	8	75%	7	10	70%
Teacher Perf	4	9	44%	8	12	67%	9	27	33%	3	7	43%	2	3	67%
Total	12	23	52%	19	39	49%	20	76	26%	12	22	55%	13	19	68%
Student Knowledge (3rd Grade) % Scores @ SAT	93	94	95	93	94	95	93	94	95	93	94	95	93	94	95
Reading	-	10.3	17.1	-	3.4	4.8	-	16.4	9.3	-	6.1	3.3	-	5.7	15
Math	-	15.4	45.7	-	-	14.3	6.6	6.5	13	-	-	-	-	3.4	10
Social Studies	-	7.7	20	6.3	3.4	4.8	19.7	16.4	9.3	-	6.1	3.3	1.1	10.2	16.3
Science	4.7	15.4	45.7	-	-	9.5	15.5	9.1	13	1.9	8.2	1.6	1.1	11.4	25
Writing	14	7.7	17.1	6.3	-	14.3	31	20	5.6	3.8	10.2	8.2	9.1	18.2	23.8
Lang. Usage	9.3	15.4	25.7	8.4	-	18	21.1	14.5	13	1.9	10.2	6.6	5.7	18.2	28.8
% Difference															
Reading			6.8			1.4			-7.1			-2.8			9.3
Math			30.3					-0.1	7.5						6.6
Social Studies			12.3		-2.9	1.4		-3.3	-7.1			-2.8		9.1	6.1
Science		10.7	30.3					-6.4	3.9		6.3	-6.6		10.3	13.6
Writing		-6.3	9.4			8		-11	-14.4		6.4	-2		9.1	5.6
Lang. Usage		6.1	10.3			9.6		-6.6	-1.5		8.3	-3.6		12.5	10.6
Subtotal Diff			110			17.6			-46.1			3.2			92.8
(5th Grade) % Scores @ SAT	93	94	95	93	94	95	93	94	95	93	94	95	93	94	95
Reading	-	7.1	5.1	8.6	-	-	4.2	15.4	8.8	2.1	12.9	3.9	-	12	5.2
Math	5.1	9.5	10.3	11.4	10.3	28.6	8.3	7.7	6.8	4.2	6.5	5.9	7.4	5.3	14.3
Social Studies	2.6	4.8	7.7	14.3	7.7	14.3	16.7	17.3	13.6	4.2	6.5	7.8	5.9	9.3	10.4
Science	-	2.4	12.8	5.7	7.7	4.8	8.3	17.3	5.1	2.1	4.8	5.9	-	4	5.2
Writing	5.1	2.4	10.3	22.9	20.5	38.1	16.7	11.5	6.3	14.6	3.2	5.9	11.8	24	9.1
Lang. Usage	2.6	9.5	5.1	14.3	20.5	33.3	8.3	5.8	6.9	10.4	9.7	9.8	13.2	14.7	9.1
% Difference															
Reading			-2					11.2	-6.6		10.8	-9			-6.8
Math		4.4	0.8		-1.1	18.3		-0.6	-0.9		2.3	-0.6		-2.1	9
Social Studies		2.2	2.9		-6.6	6.6		0.6	-3.7		2.3	1.3		3.4	1.1
Science			10.4		2	-2.9		9	-12.2		2.7	1.1			1.2
Writing		-2.7	7.9		-2.4	17.6		-5.2	-5.2		-11.4	2.7		12.2	-14.9
Lang. Usage		6.9	-4.4		6.2	12.8		-2.5	1.1		-0.7	0.1		1.5	-5.6
Subtotal Diff			26.4			50.6			-18			1.6			-1
Total Diff			136			68			-64			4.8			91.8
Student Attainment	90	94	95	90	94	95	90	94	95	90	94	95	90	94	95
Promotion Rate EX=96 SAT=96	99.5	97.6	95.7	94	93.7	97.9	97	100	99.7	97.6	98.2	97.2	95.2	99.8	98.6
Student Participation	93	94	95	93	94	95	93	94	95	93	94	95	93	94	95
Attendance Rate EX= 96 SAT=94	89.4	91.9	91.3	87.5	93.6	92	91.8	93.7	96.7	90.4	94.1	93.3	91.1	94.4	93.2

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VITA

Title of Dissertation:

Quality in School Environments: A Comparative Case Study of the Diagnosis, Design and Management of Environmental Quality in Five Elementary Schools in the Baltimore City Public Schools from an Action Research Perspective

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Project Architect, Lekawa Associates, Architects; Greensburg, PA; 1991.
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Designer, LEA Group, Inc., Engineers, Architects; Boston, MA; 1984-85.
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Publications: Journal Articles & Book Chapters

Moore, G.T. & J. Lackney. (1993a). Design patterns for America's schools: Responding to the reform movement. Chapter 1. In Meek, A. (Ed.) *Environments for Learning*. Alexandria, V A. Association for Supervision and Curriculum Development.

Moore, G.T. & J. Lackney. (1993b). School design: Crisis, educational performance, and design patterns.*Children's Environments, 10* (2).

Rabinowitz, H. and J. Lackney. (1992). The contribution of post occupancy evaluation to design and building quality. *Design and Construction Quality Forum. 2*(1), 11-22.

Publications: Conference Proceedings

Lackney, J.A., Witzling, L.P. , & McCoy, J. (1995). The Quality Elephant. *ACSA West Central Regional Conference : Design for the Environment: The Interdisciplinary Challenge,* Sponsored by the School of Architecture, University of Illinois at Urbana-Champaign, October 6-8.

Lackney, J. (1994). Assessment of environmental quality in schools: A theoretical framework and an assessment procedure. Paper presented at the *ACSA West Central Regional Conference: Environmental Quality: Programming, Design, Construction and Management*, Milwaukee, Wisconsin, October 8.

Lackney, J. (1989). Making Design Accessible: An Analysis of Case Studies Advocating Participatory and Collaborative Architectural Design Processes. In G. Hardie, R. Moore & H. Sanoff (Eds), *The Proceedings of EDRA 20.* Environmental Design Research Association, 181-192.

Publications: Reports and Monographs

Lackney, J. (1996). *Baltimore environmental quality assessment project.: Final report.* Johnson Controls Monograph Series Report R96-01. School of Architecture and Urban Planning, University of Wisconsin-Milwaukee: Center for Architectural and Urban Planning Research.

Lackney, J. (1994). *Educational facilities: The impact and role of the physical environment of the school on teaching, learning and educational outcomes.* Johnson Controls Monograph Series Report R94-4. School of Architecture and Urban Planning, University of Wisconsin-Milwaukee: Center for Architectural and Urban Planning Research.

Lackney, J., Park, P. & Witzling, L. (1994). *The costs of facility development: A comparative analysis of public and private sector facility development processes and costs.* Johnson Controls Institute for Environmental Quality in Architecture. School of Architecture and Urban Planning, University of Wisconsin-Milwaukee.

Witzling, L., Childress, H. & Lackney, J. (1994). *The nature of environmental quality in the workplace: A Johnson Controls Institute position paper.* Monograph Report R94-8. School of Architecture and Urban Planning, University of Wisconsin-Milwaukee: Center for Architectural and Urban Planning Research.

Publications: Reports and Monographs (cont.)

Moore, G.T. & J. Lackney. (1994). *School facilities for the Twenty-first Century.* Monograph Report R94-1. School of Architecture and Urban Planning, University of Wisconsin-Milwaukee: Center for Architectural and Urban Planning Research.

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